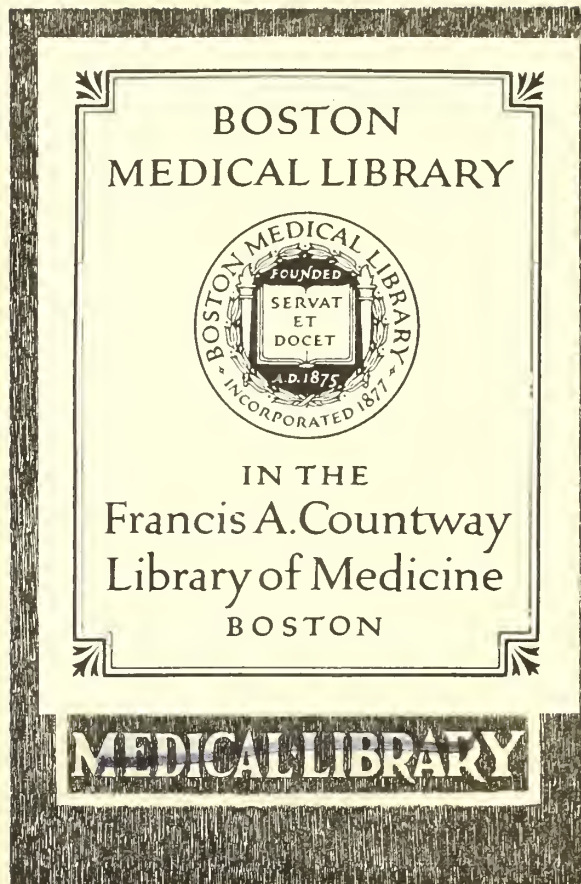


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The Journal of The **SOUTH CAROLINA** *Medical Association*

PEDIATRIC ISSUE

TOURETTE'S DISEASE

ADVANCES IN PEDIATRICS

BALLOON ATRIAL SEPTOSTOMY

VITAMIN K IN BLEEDING INFANTS

X-RAY EVIDENCE OF MONGOLISM

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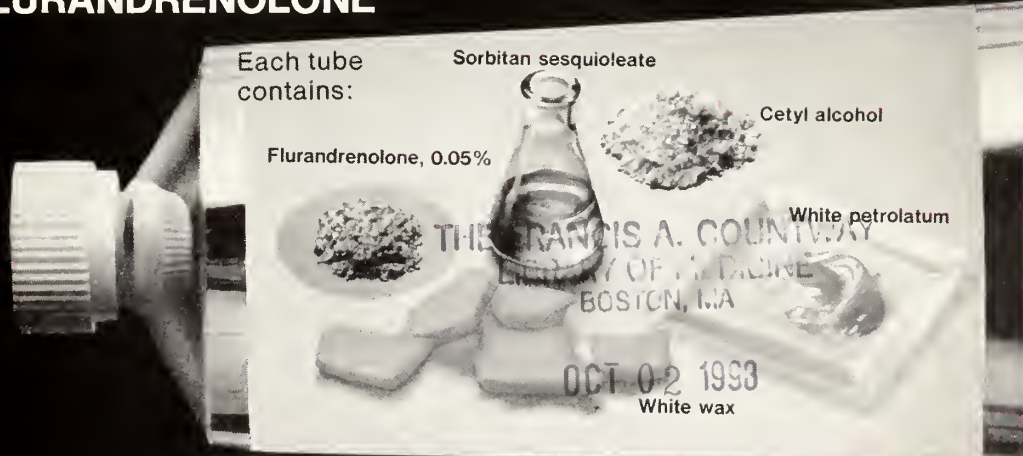
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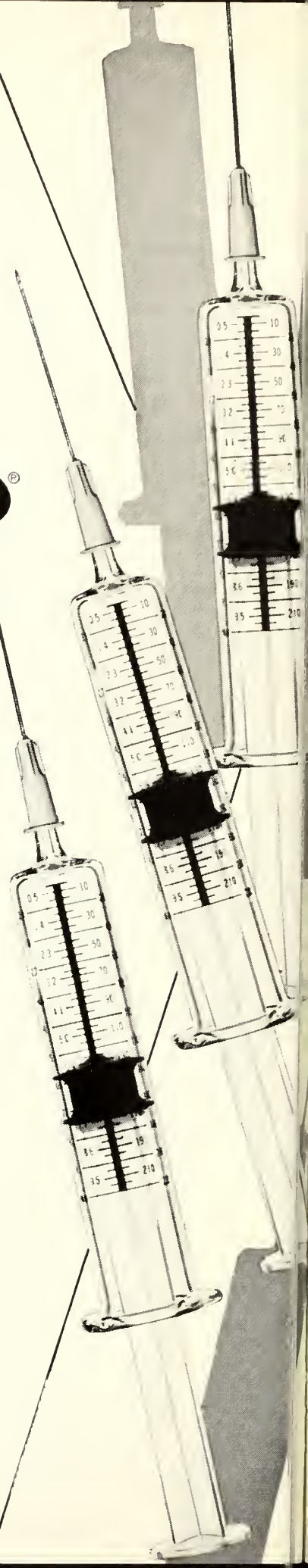
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JANUARY, 1969

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NUMBER 1

BALLOON CATHETER PALLIATION FOR INFANTS WITH TRANSPOSED GREAT ARTERIES

REPORT OF TWO CASES WITH SUCCESSFUL BALLOON ATRIAL SEPTOSTOMY

HAZEL M. WEBB, M.D.
ARNO R. HOHN, M.D.

While it is established that congenital heart disease is a major problem to those caring for infants and children,¹ it is less well known that transposition of the great arteries (TGA), is a leading cause of neonatal cardiac deaths. This defect is found in approximately 20 per cent of children dying of congenital heart disease.² In most instances, if untreated, this lesion is fatal within the first six months of life; half of these deaths occur in the first month.

In an effort to overcome the problems posed by TGA, several types of palliative and corrective procedures have been devised. Currently, palliation is mandatory for all infants because Mustard's operation, the procedure of choice for correction, is applicable only to those over one year of age.^{3,5-9} The Blalock-Hanlon method⁴ for surgical correction of intra-atrial septal defect has commonly been utilized for this palliation, but carries a mortality rate of 30 to 57 per cent.¹⁰

In 1966, Rashkind and Miller⁹ reported a simplified, non-surgical technique for creation of an atrial septostomy using a balloon tipped catheter. This special catheter is introduced into a femoral vein, passed into the left atrium by way of the foramen ovale and the balloon inflated. The balloon is then withdrawn, thereby lacerating the valve to the foramen ovale to create an atrial septal defect. Utilizing this technique, the mortality rate of atrial septostomy is significantly reduced by eliminating general anesthesia and thoracotomy in the critically ill infant with transposition of the great arteries. An additional advantage of the palliative balloon atrial septostomy is that it leaves both an intact pericardium and a virgin chest for later operative correction. It is the purpose of this communication to demonstrate this major therapeutic advance by presenting two patients who had successful palliation of their TGA in the first week of life.

Case 1. G. O., (MCH No. 141776) was 24 hours old when admitted because of persistent cyanosis since birth. He was the product of an uncomplicated

From The Department of Pediatrics, Medical College of South Carolina, 80 Barre Street, Charleston, South Carolina 29401.

pregnancy and delivery. However, the mother worked in a high radiation zone for about two days during her sixth week of pregnancy. Examination revealed an intensely cyanotic, sluggish, but well formed newborn (2.95 kg) in no distress with a respiratory rate of 60 per minute and a heart rate of 120 per minute. There were no heart murmurs heard, and the second heart sound at the left base was single. The peripheral pulses were adequate. The lungs were clear and the liver edge was at the right costal margin. The admission hemogram showed hemoglobin to be 17.8 gm/100 ml. The electrocardiogram was normal for this age showing right ventricular dominance with low voltage. On the chest film the cardio-thoracic ratio was 52 per cent, with a narrow cardiac waist and increased pulmonary vascularity.

At 43 hours of age cardiac catheterization verified the diagnosis of complete transposition of the great arteries. The ventricular septum was intact and a small patent ductus arteriosus was demonstrated by cineangiography. The systemic oxygen saturation was 47 per cent while the infant was breathing 100 per cent oxygen. An atrial septal defect was created by Rashkind balloon catheters (figure 1). Subsequently, the arterial oxygen saturation rose to 61.5 per cent, and cineangiography demonstrated increased passage of contrast medium from the left atrium to the right atrium across the atrial septal defect.

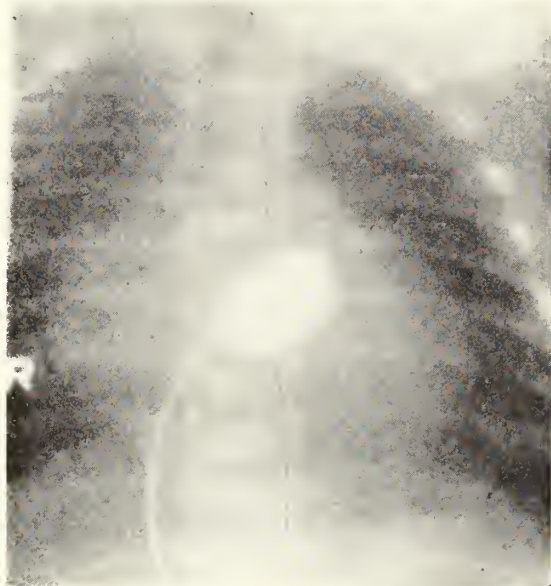


Fig. 1. Reproduction of a single 16 mm cine frame from Case 1. The contrast medium-filled Rashkind balloon catheter can be seen in the left atrium. Shortly after this picture was taken, the catheter was withdrawn to the right atrium, lacerating the valve to the foramen ovale, and creating an atrial septal defect.

Following catheterization, digitalization was instituted for impending heart failure. The infant gradually improved and was weaned from oxygen. Thirteen days following the balloon atrial septostomy the infant was discharged, showing a slow, but progressive, weight gain and marked lessening of the cyanosis.

When evaluated eleven months after the atrial septostomy the infant showed splendid progress, with a slow but adequate weight gain, a stable hematocrit reading, and no evidence of progressive cardiac decompensation either clinically or radiographically.

Case 2. C. B.; (MCH No. 146490) was admitted at the age of 4 days because of a heart murmur associated with cyanosis. He was a small (2.7 kg birth weight), moderately cyanotic but active infant in no distress. His respiratory rate was 68 per minute and heart rate 150 per minute. A Grade I/VI short ejection type systolic murmur was heard at the second and third left parasternal areas and a gallop rhythm was present. The peripheral pulses were adequate and the liver extended 2.5 cm below the right costal margin.

On admission the hemoglobin was 21 gm. A right ventricular hypertrophy pattern was present on the ECG (Figure 2). Serial chest films showed increased pulmonary vascularity and progressive cardiomegaly with a cardio-thoracic ratio of 65 per cent.

At six days of age cardiac catheterization and cineangiography studies showed TGA with a large patent ductus arteriosus and an intact ventricular septum. With the patient breathing 100 per cent oxygen the systemic oxygen saturation was 85 per cent. Following the creation of an atrial septal defect by use of the Rashkind balloon catheter, the systemic oxygen saturation increased to 90 per cent in room air, and another cineangiography study verified the creation of an adequate atrial septal defect.

Afterwards, the infant was maintained in a high oxygen environment and digitalized because of impending congestive heart failure. His color and respirations improved. However, the congestive heart failure was not completely controlled. Forty-eight hours later the large patent ductus arteriosus was ligated. Gradual improvement followed. Oxygen was discontinued, and the baby was discharged 11 days postoperatively on digoxin.

At six weeks of age, D. B. had to be readmitted to the Medical College Hospital because of progressive congestive heart failure and increasing cyanosis. This episode of cardiac failure and increasing cyanosis was controlled with large amounts of digoxin and the infant was discharged well compensated 13 days later.

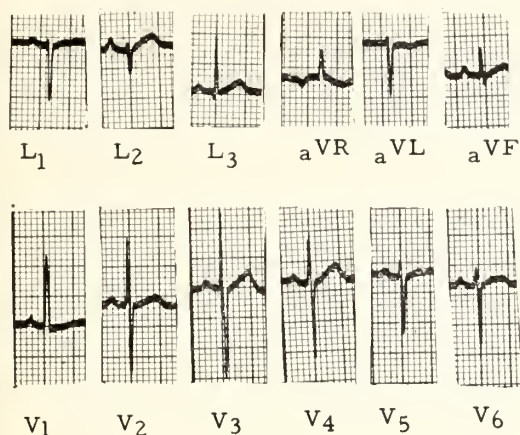


Fig. 2. Scalar electrocardiogram from Case 2. The tall R in V_1 with the deep S in V_6 suggest right ventricular hypertrophy in the newborn with transposed great arteries.

Comments

The newborn with transposition of the great arteries most often develops early cardiac difficulties because of inadequate mixing between the parallel pulmonary and systemic circulations. In addition he frequently has high left heart pressures as a result of increased pulmonary blood flow. These derangements lead to serious systemic desaturation, pulmonary hypertension, congestive heart failure and death. Creation of an atrial septal defect relieves the lack of mixing by allowing inter-atrial shunting. Consequently, arterial oxygenation improves. In addition, the atrial septostomy decompresses the left atrium, thereby releasing the pulmonary congestion. Thus it can be seen that the creation of an atrial septal defect is of considerable physiologic benefit to infants with TGA.

With Rashkind's introduction of the technique of the balloon catheter for atrial septostomy in 1966,⁹ a rapid, relatively safe and effective means of "medical" palliation of transposition of the great arteries became available for the critically ill infants who were dying of hypoxemia and congestive heart failure. In contrast to previously published data,^{4,10,11} which indicate an immediate mortality of be-

tween 30 and 50 per cent with surgical atrial septostomy, at the present time, at least 80 per cent of babies with transposition of the great arteries receive immediate improvement from the balloon septostomy.¹⁰ The Rashkind procedure is particularly advantageous in the first week of life when surgery is most hazardous. In addition to the early benefits, most patients have long term palliation. In these, future corrective surgery by Mustard's operation can be done uncomplicated by adhesions and scarred pericardium. It should be noted that other conditions such as total anomalous pulmonary venous drainage, tricuspid atresia, and even the hypoplastic left heart syndrome may benefit from atrial septostomy.

As in the reports of others⁹⁻¹¹ successful palliation in our two cases clearly indicates that a reduction in the mortality rate can be expected if the cyanotic infant (especially the newborn) is referred early to a medical center equipped with personnel and catheterization facilities for emergency treatment of these patients. Physicians are urged to consider any cyanotic infant, especially the newborn, as a potential candidate for emergency balloon atrial septostomy unless heart disease, particularly transposition of the great arteries, can be absolutely ruled out.

As illustrated in Case 2, careful management is mandatory following successful palliation until the infant's condition stabilizes. The criteria for determining this should include lessening of cyanosis, absence or control of congestive heart failure, and lack of progressive cardiomegaly. Inasmuch as many infants, such as our Case 1, will often have systemic arterial oxygen saturation around 60 per cent after successful balloon atrial septostomy, cyanosis is not usually an indication for concern. However, signs of deterioration like progressive cardiomegaly or a rising hematocrit reading should be carefully evaluated. If necessary, repeated cardiac

catheterization may be considered. Persistence or progression of cardiac failure may make this re-evaluation mandatory.

In spite of successful palliation, these infants remain very prone to infection. As with other cyanotic heart defects, the risk of a cerebral complication from paradoxical embolism, thrombosis as a result of dehydration, or brain abscess, must always be kept in mind.

Lastly, the authors would like to emphasize that it was cooperation between referring physician and the pediatric cardiologist that enabled the lives of the two newborns presented to be salvaged, and through such continued cooperation eventual correction of their defects can be sought. It is only by such prompt referrals that the survival of these babies can be achieved.

Summary

A technique employing a balloon catheter to create an atrial septal defect has

become available to help the newborn with transposition of the great arteries. The balloon septostomy has been shown to be a relatively safe and effective means of palliation for such babies. Since one-fifth of the deaths from congenital heart disease in the first month of life are due to transposition of the great arteries, the balloon septostomy constitutes a major advance in the treatment of these cyanotic infants.

Two infants in the first week of life, with transposition of the great arteries, both undergoing successful palliation at the Medical College Hospital by means of the balloon catheter, are presented. Total correction of the transposition of the great arteries, utilizing Mustard's operation, is planned for these infants when they are approximately 18 months of age. On the basis of the reported experience, early referral of all cyanotic newborns who are thought to have congenital heart disease is indicated.

Addendum

C. B. (Case 2) died suddenly two weeks after a Heart Clinic check-up at the age of 5½ months. Autopsy examination verified the transposed great arteries and disclosed the large atrial septal defect created by the balloon catheter (Figure 3). A ventricular septal defect, not detected at the time of the heart catheterization, was also found. In retrospect, pulmonary artery banding should have been carried out to curb the excessive flow through the ventricular septal defect.

(See page 6 for references.)



Fig. 3. (Case C. B.) A photograph of the heart specimen placed horizontally and viewed from the right side. A large atrial septal defect created by the balloon catheter, indicated by the arrow, can be seen through the opened atrium.

VITAMIN K IN BLEEDING INFANTS

REPORT OF TWO CASES

SAMUEL K. MORGAN, M.D.*

Unexplained bleeding in infants associated with recent gastrointestinal upset, decreased oral intake, and antibiotic therapy should alert the physician to the possibility of vitamin K deficiency. Hypoprothrombinemic bleeding may occur in young children. A combination of factors is likely to be present.

Two cases of bleeding in children which developed at three months and at four and one-half months of age and responded to vitamin K administration are described.

Case Reports

Case 1. This three month old white male was hospitalized with recurrent diarrhea from birth. Pregnancy was complicated by maternal vaginal hemorrhage during the first two trimesters. There was no other familial history of bleeding. Term delivery was normal. The birth weight was 3 kg. No information regarding vitamin K supplement at birth was available. Multivitamins were given and the child was fed several different proprietary formulas. He had been hospitalized at three and four weeks of age with diarrhea. The stools contained mucus and blood, varying from bright red to black. Following the first hospitalization, he was placed on solids. These were discontinued upon the recurrence of diarrhea. Antibiotics were given. On admission the child's weight was 4.48 kg. He appeared quite pale. Blood was oozing from a recent heel puncture. There was a soft systolic murmur along the left sternal border, and the liver extended 1 cm below the right costal margin. Otherwise, the physical examination was negative. Laboratory studies on admission revealed a hemoglobin value of 5 gm/100 ml, RBC 1.7 million, WBC 10,200 cu/mm, hematocrit 15 volumes per cent. The differential was normal, with 5 nucleated red cells. The reticu-

loeyte count was 11.1 per cent and the platelet count 496,000. The peripheral blood smear revealed slightly hypochromic and microcytic red cells with marked polychromatophilia. Stool cultures were negative. The stools were strongly positive to guaiac and benzidine tests. Liver function studies were normal. On admission the prothrombin time was 56.9 seconds with a control reading of 12 seconds. Twelve hours following the injection of 5 mg of phytonadione (vitamin K₁) intravenously, the prothrombin time returned to normal. During hospitalization, the child became completely asymptomatic and his stools returned to normal. At the time of discharge, his hemoglobin had risen to 7 gm and his VPC was 23 volumes per cent. There was continued reticulocytosis. He was discharged on a diet appropriate for his age.

Case 2. This four and one-half month old white male was born two months prematurely, weighing 1.7 kg. There was no family history of bleeding. Diarrhea developed soon after birth. Various formulas and antibiotics were used in an attempt to control the stools. At approximately one month of age, the child began passing grossly bloody stools and vomiting blood. He was hospitalized, transfused, and treated with antibiotics with apparent improvement. Three weeks later he was again hospitalized, transfused, and treated for pneumonia and myocarditis. He was discharged on a soybean formula and did well for one month. He then developed an upper respiratory infection and diarrhea; the stools consisted of bloody water. His hematocrit reading was 33 volumes per cent. He was given an intramuscular injection of an antibiotic. He bled for two days from finger and heel punctures and from the site of the intramuscular injection. Vomiting with hematemesis prompted admission.

On admission he weighed 4.25 kg. He was crying and irritable. There was a soft systolic murmur along the left sternal border, and fine moist rales were present throughout both lung fields. The diagnoses on admission were bronchopneumonia, possible myocarditis and bleeding. The hemoglobin was 8.8 gm, hematocrit 25 volumes per cent, RBC

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2.54 million, WBC 14,200 cu/mm with a normal differential. The reticulocyte count was 0.5 per cent and platelets 181,000. The peripheral blood smear revealed atypical lymphocytes (virocytes). Attempts to draw blood for a prothrombin test were unsuccessful and hematomata formed in the femoral areas. Empirically the child was given 5 mg of phytonadione (vitamin K₁) intravenously. Within six hours his blood clotted readily, and his prothrombin time was 13.4 seconds with a control of 12 seconds. The partial thromboplastin test (PTT) was slightly prolonged. Both the prothrombin time and the PTT were normal when they were re-evaluated one week later. The child subsequently did well and was discharged with no further evidence of bleeding.

Comment

There is little concern regarding vitamin K intake beyond the newborn period. Vitamin K requirements are not known.¹ The blood coagulation factors II (prothrombin), VII, IX, X, and XI² are vitamin

K-dependent factors. Infant formulas contain varying amounts of vitamin K. This is generally small but a better source than human milk.³ Vitamin K is produced by intestinal bacteria and is present in foods.⁴ Diarrhea and antibiotics which interfere with the intestinal flora will produce hypoprothrombinemia.^{4,5} Decrease in the oral intake of liquids and solids supplying vitamin K may contribute significantly to the vitamin K depletion.

These cases suggest that a combination of factors such as antimicrobial interference with intestinal vitamin K production, alterations of normal vitamin K absorption due to chronic or recurrent diarrhea, and decreased dietary vitamin K may have caused the bleeding.

The author is indebted to Dr. Hulda Wohltmann for the inclusion of Case 1 and Dr. Margaret Jenkins for Case 2.

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TOURETTE'S DISEASE

SUCCESSFUL TREATMENT

ROLAND E. BIEREN, M.D.

William S. Hall Psychiatric Institute
Columbia, South Carolina

According to Friedman and Kaplan,¹ Gilles de la Tourette first published the description of this autonomous syndrome in 1885. The symptoms begin in childhood. Afflicted patients start to exhibit grimacing, tics and compulsive motor outbursts associated with coprolalia. It is common for such unfortunate children to embarrass themselves and others by suddenly crying out obscene four letter words in a repetitive fashion. This strange behavior is spontaneous and unpredictable and may also be accompanied by barking and coughing noises. Emotional stress and fatigue aggravate the objectionable behavior and the child soon becomes an outcast from family and school.

The etiology is not known and until recently the prognosis was poor, as no reliable treatment was available. In 1961, Seignot² reported successful treatment of a patient with haloperidol (Haldol). In 1963, Challas and Brauer³ successfully treated another patient with this drug. In 1964, Chapel, Brown and Jenkins⁴ reported two more patients similarly treated with success. During the past year Shapiro and Shapiro⁵ have added three more and Boris⁶ another. The following case demonstrates in detail many aspects of this hitherto extremely bothersome disease.

Tommy, a 14 year old white male was admitted to the William S. Hall Psychiatric Institute Nov. 1, 1967 for evaluation and treatment on the inpatient service. He had previously been committed to the South Carolina State Hospital by court order because

he had been making obscene phone calls. When he was five his mother deserted the home. He, his father, and a younger sister then lived with the paternal grandparents for four years. The father then remarried and reestablished a home for them with the stepmother.

At age six Tommy began to have compulsive outbursts of obscene words. At age seven he began to have tics and at age eight the outbursts increased to the point that he was in trouble both at home and in school. At age nine, after his father remarried, his symptoms increased again in severity, and he was hospitalized elsewhere for evaluation. The diagnosis of Gilles de la Tourette's Syndrome was made and for the next five years he received intermittent psychotherapy. In 1966 he was placed in a disciplinary home and remained there for 14 months. After he left the disciplinary home, he lived for a while with his paternal grandparents and then with his family. Because of his illness he was only in sixth grade in school and in trouble everywhere. His behavior finally brought him before the court and to the State Hospital and finally to the Institute.

On the inpatient service he continued to have frequent tics of face and shoulders and outbursts of obscene words. Before the nurses he often burst into tears from embarrassment over his inability to control himself. As he adjusted to the ward, the outbursts became less frequent and less severe. However, any stress would aggravate them.

On the 28th hospital day haloperidol (Haldol) 1.0 mg twice daily was begun and on the 34th hospital day it was increased to 2.0 mg twice daily. Trihexyphenidyl hydrochloride (Artane) 2.0 mg twice daily was added because he was showing some extrapyramidal symptoms. From the time of admission he had been included in the milieu therapy of the ward and was assigned to a therapy group with other patients his age once a week. His parents were in group therapy once a week with a group of parents who all had children with psychiatric

problems. It was recognized promptly that he was not only shunned by his peer group but that his entire family had strongly rejected him because of his objectionable outbursts.

After one month of treatment with haloperidol, he was acting much more appropriately; his tics and outbursts diminished in frequency and severity, and he was able to accept responsibility for his behavior. On Jan. 22, 1968—after he had been taking haloperidol 2.0 mg twice daily for 52 days—the question was raised at staff conference as to the advisability of continuing the drug. At this point, his family had been greatly pleased with his improvement and were due to take him home for one week. It was decided that when he returned he would be placed on a placebo at some future date in order to determine more adequately his need for the drug. He was informed of this decision but not told when it would be put into effect.

When Tommy returned on Feb. 1, 1968, he was reduced to 1.0 mg haloperidol twice daily. By the end of two weeks on the reduced dose there was a marked increase in the frequency and severity of outbursts. The dosage was increased again to 2.0 mg twice daily and the drug was now given to him in a concealing capsule so that he could not identify the contents. He improved dramatically in a few days and his behavior thereafter remained as good as it had ever been. On March 8, on a Friday afternoon, a placebo was substituted for haloperidol without his suspecting. On Saturday his outbursts began to increase and by Sunday morning they had become uncontrollable. On Monday morning rounds he was found huddled in bed, crying, sobbing, and extremely depressed because of the uncontrollable tics and outbursts.

Tommy was immediately put back on haloperidol

2.0 mg three times daily, the largest dose yet given to him. In four days he was completely free of tics and outbursts of obscene words. When his family visited again, they were delighted with his behavior. He was sent home for two days and again for seven days. At the end of the latter visit, the family stated they were ready to take him home permanently. He was then discharged on April 9. He has remained well since. On his third return visit as an outpatient he reported that he was going to summer school. On his last visit on Sept. 5, 1968 he was quite pleased that he made up some lost schooling during the summer. He is now back at school for the fall semester.

Conclusion

Haloperidol is a new major tranquilizer known as a butyrophenone. It differs from all the other major tranquilizers in common use. It improves psychotic behaviour. In the few cases reported of Tourette's Disease it has been promptly effective in controlling symptoms as it is in the case here reported. Tommy has continued taking the drug since discharge from the hospital with complete relief of symptoms. He will be maintained on the dose of six mg daily for an indefinite period. The drug does produce adverse effects, chiefly neuromuscular extrapyramidal reactions. These can be promptly reversed by administration of drugs used in Parkinson's disease.

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ADVANCES IN PEDIATRICS

R. M. POLLITZER, M.D.

Greenville, South Carolina

Most of us in our mad rush today to get something done and, incidentally to earn a living, rarely have time or take time to look back and see what has been accomplished during our life-time. This, of course, is not surprising and perhaps is good, but, even so, someone occasionally should record the major happenings so that not only do we see where we are now, but also whence we have come. Further, though taking pride in what has been accomplished, we should not be overly proud for the progress made does not compare to what is to come.

Without in the least taking any credit for the many advances made in medical science during my lifetime, yet by living longer than many and, therefore, being privileged to witness many advances, and also to look back to the period in Medicine when I graduated as an M.D. and at that time thought that a tremendous amount was already known. And so it was compared to the past, but no one could dream of what was to come in the future.

As in every branch of science, any advance, whether in the laboratory or in the field, comes about through careful and well checked investigation. Regardless of what is found after reporting this, time must elapse so that others in the same domain may report on their agreement or disagreement.

Parenthetically, here it may be well to state that though within the past century or even less, tremendous progress has been made in medicine and indeed in all

branches of science, yet we must not forget that long ago, for instance at Salerno in Italy, where about 1,000 A.D. or even one or two centuries earlier, there flourished a medical school which attained great fame so that students and doctors were attracted from far and wide. Of course, the lecturers considered themselves as knowing much.

Looking backward and knowing so much more than our parents and grandparents, we should wonder if in time to come, even one or two centuries, we too may not be considered as being rather ignorant. However, we are not permitted to view the future, but can easily review the past and envision how greatly we have progressed even within the memory of living men, say within the past 50 or 60 years, and further feel that we are justified in taking pride in the many advances that by good fortune we have been privileged to witness in our own life-time. Indeed, tremendous progress has been made since about 1880, in the branches of pathology, including bacteriology, virology, which is relatively new, especially radiology, biochemistry and particularly, in therapeutics. For about 60 years ago, very few drugs now in use had been discovered. Indeed, we are living in a new world. Someone has written that "technological knowledge has increased 300% in the past decade."

Today to become an M.D. one must have some knowledge not only of anatomy, physiology, pathology and therapeutics, but

also of physics and chemistry, especially biochemistry, roentgenology, bacteriology and just as importantly, virology, and too, genetics is rapidly becoming important.

While a physician or surgeon may have narrowed his field, yet before he can graduate as an M.D. he or she must have studied many sciences that were not even in the curriculum 60 years ago.

And so it is with pediatrics, for with the advent of bacteriology and soon after the recognition of the importance of clean milk in infant feeding, infant mortality greatly decreased. Nearly all of pediatric practice consisted of infant feeding, pneumonia & summer diarrhea. Today the situation is vastly different. We read of neo-natal diseases, of inborn errors of metabolism and of all kinds of abnormalities in the blood. Through the use of the x-ray discovered by Roentgen in 1895, many parts of the body have been explored and much knowledge of anatomy, physiology and pathology acquired.

Formerly, the surgeon limited his art chiefly to amputations and was even fearful of invading the abdomen. Now he even operates on the heart, the lungs and the brain, and transplants some organs with moderate success.

Some of us still living can recall with some pride the advent of the sulfa drugs, which did much to decrease mortality. In 1935 Domagk in Germany first used prontosil, the forerunner of sulfanilamide and its many chemically allied drugs, which were soon shown to be so effective in many infectious diseases. One year after the introduction of prontosil, 1,000 derivatives of sulfanilamide had been made. In 1938, Whitby introduced sulfapyridine as the treatment for pneumonia, thereby cutting the mortality by one third. Next in 1940, Long of the U.S.A. introduced sulfathiazole, thereby reducing the mortality from pneumonia in some clinics from 20% or 30% to 3%.

But a still better antibiotic was to come. In England, Alexander Fleming in 1928

discovered a mold which was a strain of penicillium. This proved to be active against staphylococci, and not toxic to small animals. Ten years later, Florey, Chain and others at Oxford began their studies on penicillin. In 1941, during World War II, they were successful in obtaining funds in the U.S.A. for further investigation. In 1942, enough penicillin had been produced to treat one patient. At first the cost of manufacturing this was \$200.00—just enough for one patient. Later by mass production an equivalent amount cost only \$1.50. Since that time—many drug firms have synthesized a large number of penicillin derivatives for use by mouth, subcutaneously, or intravenously. No one can estimate the number of lives that have been saved by this single antibiotic.

Formerly, especially in the southern part of the U.S.A. typhoid fever was very widespread and had a considerable mortality. In 1900, its death rate was 31 per 100,000, but it has been reduced to 0.2 per 100,000. This decrease in mortality has come about chiefly through prevention by the routine use of typhoid vaccine as well as better sanitation. When the disease does occur it usually is treated by giving chloramphenicol.

Today, tuberculosis is treated with great success by drugs. Fresh air and forced feeding is passe. Even the dreaded tuberculous meningitis, which about 40 or 50 years ago had a mortality of 100%, almost invariably, now can be cured by drugs and is rarely seen.

No one who was practicing medicine 40 years ago can but be astonished at the decrease in the incidence and mortality from diphtheria. In 1900, the death rate was 40 per 100,000. But this fell to 0.6 in 1947 and today must be extremely low. Now it is a rare disease, due to the fact that routinely all babies are inoculated with diphtheria toxoid and it is a rarity to see the disease in the U.S.A.

But not all progress has been made in

the conquest of infectious diseases. In 1922 insulin, first called iletin by Eli Lilly Company, was isolated by Banting and Best in Canada. Thus today most diabetics live comfortably by injections of insulin.

In 1955, Salk vaccine was first used in the prevention of poliomyelitis, and then in 1963 Sabin offered oral polio vaccine which has proven to be an improvement in the prophylaxis of the disease. All of us recall with ease the great amount of paralysis and the occasional deaths from this widely prevalent and serious infectious viral disease.

In 1964, after considerable research, a vaccine for the prevention of measles was introduced. Previously, measles had been regarded as a "childhood disease" that was inevitable. It had produced a tremendous amount of illness in children as well as some serious complications and in a few, even death.

In May 1958, in a presidential address, Dr. A. A. Weech discussed the recognition and understanding of sickle cell anemia, and also the recognition of the importance of genetic diseases, which had first been

called to our attention by Garrod as long ago as 1908, in a paper, entitled, "Inborn Errors of Metabolism." Thus was born the study of genetics, and now the importance of this scientific branch in plant and in animal life is recognized, and put to practical use. Many abnormalities previously considered as the will of God, and thus unavoidable, are now known to be of genetic origin and undoubtedly with more knowledge with the passage of time can be avoided or prevented, by genetic counseling. But in the meanwhile, the orthopedist can do much by surgical measures to help many children to overcome their deformities.

The internist has learned to recognize and also to treat some diseases previously not known, and some considered hopeless.

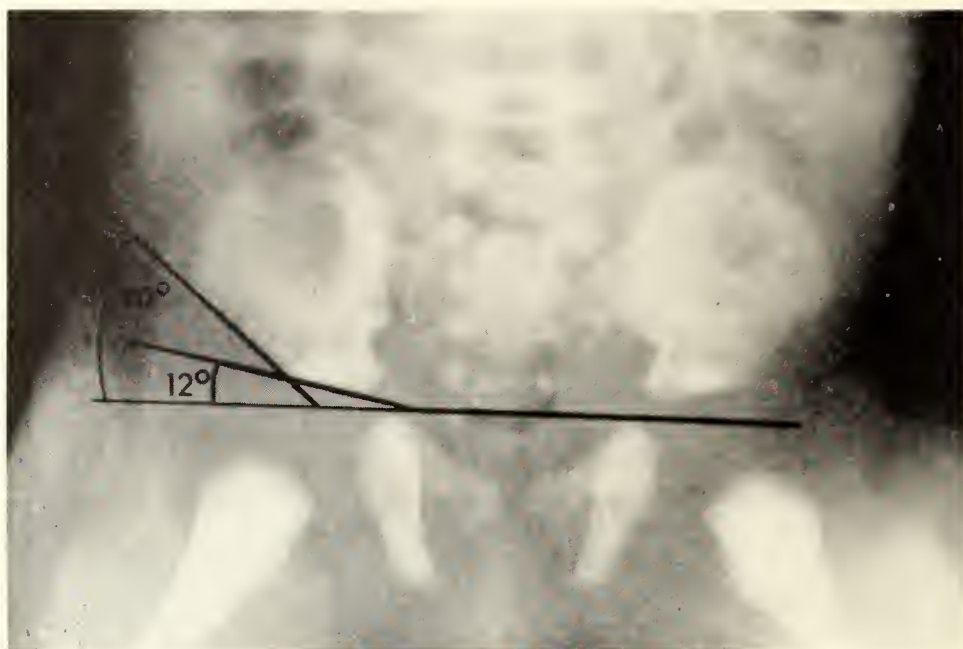
All in all while authorities differ greatly in what they consider important, yet it is apparent that tremendous advances in pediatrics as well as in other branches of medical sciences have been made, and that diseases once not amenable to treatment or not even recognized, now are prevented or treated with success.



X-RAY FILM OF THE MONTH

S. E. PUCKETTE, JR., M.D.

Medical College Hospital
Charleston, South Carolina



The referring pediatrician having observed this newborn child's facies and hands requested an AP film of the pelvis. While the diagnosis was thought fairly certain by inspection of the film the angles as shown on the patient's right were constructed for confirmation (originally bilaterally).

The infant was suspected of being a mongoloid. Caffey and Ross pointed out that the mongoloid has a characteristic pelvis with flattening of the under edges of the iliums and widening of the iliac wings and bodies.^{1,2} The appearance of the pelvis is so characteristic that the diagnosis can be suggested from simple inspection of the film in 3 out of 4 cases. These two usual features can be meas-

ured quantitatively by the acetabular angle and the iliac angle as drawn above (normally done bilaterally). In an effort to further accentuate the difference in the pelvis of the normal and the mongoloid, the values of the acetabular angle and the iliac angle can be added to arrive at a value referred to as the iliac index.

Graphs have been constructed indicating normal and abnormal ranges of all three indices. While there is an overlap of abnormal and normal values, the roentgenographic findings using their graphs are diagnostic in 4 out of 5 mongoloids, suggestive in 4 out of 20 and uncertain or normal in 1 out of 20. The illustration is from a newborn who was clearly a mongoloid.

After 6 months of age, in addition to the foregoing two features, bilateral smallness of caliber and gradual taper to the ischial rami may be seen as well as bilateral coxa valga. These are suspected of being due to hypoplasia and deformity secondary to disuse. While single elements

of the complex are found in normal patients or with some other diseases, the tetrad appears highly specific. The pelvic findings are most pronounced and most conclusive during infancy when the clinical diagnosis of mongolism is most uncertain.

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Intellectual Characteristics of Phenylketonuric Children—Walter A. Luszki (Charleston) *Amer J Ment Defic* 71:531-532 (Jan) 1967.

Many studies show that children who have phenylketonuria are mentally retarded unless they have been fortunate enough to receive dietary treatment beginning in the first few days of life. Some studies, however, report function above the mentally retarded range even without dietary treatment.

This study compares the intellectual functioning of 15 Caucasian phenylketonuric children with non-phenylketonuric controls in regard to the number of Verbal and Performance items each is able to pass on the Cattell Infant Intelligence Scale and the Stanford-Binet Intelligence Scale, Form L-M, an upward extension of the Cattell.

The diagnosis of PKU was made at the mean age of 13.3 months. A control group was matched individually for age, sex, and IQ. The patients with PKU did not differ significantly from non-PKU subjects in terms of their successes on verbal and performance tasks. There were no differences in handedness and speech development between the two groups.

Th results indicate that the phenylketonuria patients in this study are not different in their verbal and performance abilities from matched non-phenylketonuric children. These results suggest that from an educational standpoint the label of phenylketonuria has little significance. A five year old phenylketonuric child with an IQ of 70 on the Cattell or Binet apparently is not different from a non-phenylketonuric child with the same IQ. Both seem to have about the same mental capacities in terms of verbal and performance tasks.

The Nature and Significance of the Resistance at the Thoracic Duct-Subclavian Vein Junction—Bradham, R. R. and Takaro, T. (Charleston) *Surg.* 64:643, 1968

Previous studies have indicated that there is a resistance at the thoracic duct-subclavian vein junction which exerts an inhibitory influence on lymphatic flow through it. An excessive flow of lymph from areas of congestion present in certain pathological states, such as cirrhosis, might exceed the limits of the lymphatic-venous communication to convey it to the venous system. This investigation attempted to elucidate this mechanism.

The nature of the resistance to lymphatic flow at the thoracic duct-subclavian vein junction was studied in mongrel dogs by anatomical dissection, cinelymphangiography, magnified roentgenograms, and by vinyl acetate casts. It was found that the termination of the thoracic duct may be by single or multiple junctions with the subclavian vein. These terminal end vessels taper as they enter the vein wall and allow flow by droplets. The opening is covered by a delicate valve cusp which prevents reflux of blood. Free flow or streaming of the contrast material through these junctions was not observed. The narrowed, tapered terminations of the thoracic duct are clearly demonstrated in the cinelymphangiograms and in the magnified x-ray films and vinyl acetate casts illustrating this article.

Apparently, there is regulation of lymph flow through these junctions due to an anatomical narrowing of the thoracic duct terminations. This mechanism is probably very important in disease states in which excessive lymph is produced.

President's Page



The Moody Report has received considerable publicity of late. Inasmuch as this report takes a rather hurried and incomplete look at medical education in South Carolina, perhaps we should discuss it a bit here.

The report has recommended that, "Immediate steps be taken towards affiliation between the Medical College of South Carolina and the University of South Carolina." It fails to point out any advantages in such affiliation other than to state, "Unless such an affiliation takes place, the Medical College which is not capable, and which without affiliation cannot become capable, of the great task before it."

We fail to see, nor has anyone brought forth, any concrete reasons why such an affiliation should take place. These institutions, which are over a hundred miles apart, could have little real interaction as part of the same university system. Certainly, nothing is more advantageous than the relationship now existing between the Medical College, Clemson University, University of South Carolina, the Citadel, Greenville General Hospital, Spartanburg General Hospital, and other educational institutions in this state.

The Moody Report takes a dim view of the Lippard-Berryhill-Hinsey Report which recommends a second medical college in Columbia. However, both the Moody Report and the Lippard-Berryhill-Hinsey Report urge that a primary consideration should be the upgrading of the present medical college. This, like all advances made in educational institutions, will cost money. Such funds, of necessity, will be coming from federal, state and private sources and grants. Experience readily shows that two separate institutions stand to gain more federal support than if they were under one system. Also, let us face reality; under the present tax structure the high cost of medical education in this state will need more and more federal support in the future.

Another Moody recommendation called for the building of four additional institutions of higher learning. This recommendation can very well be satisfied in one instance by forming a university around the present Medical College. Such a "Health-Science University" would be a bold and much-needed step into the future.

With university status the curriculum could be modernized and accelerated to the point whereby a high school graduate could become a physician in six years. This means an increased number of excellently trained physicians in the future. University status will greatly increase the number of sources from which funds would be available. The new research building, currently under construction at the Medical College, will be entitled to increased research funds.

South Carolina has many needs, and the Moody Report points the way on several of them. However, let us support our Medical College and move ahead towards a Health-Science University.

We are greatly indebted to Dr. William H. Hunter of Clemson, South Carolina for his help in correlating the above thoughts.

JOEL WYMAN, M.D.
President

Editorials

Why Utilization Review?

If we do not keep our own medical linen clean, someone else is going to do it for us in a much less desirable way.

When our Blue Shield was established under the aegis of the South Carolina Medical Association, it was on the assumption that it was a healthy arrangement for both the patient and the doctor. Time has proven that assumption to be correct. From the outset it was perhaps optimistically presumed that doctor as well as patient would be always vitally concerned with the Blues' successful operation, and that both parties would make their best efforts to ensure basic financial success (non-profit) by observing simple and fair rules of the game. This implied that the patient would not use his Blue Shield privileges unnecessarily, and that the doctor would contribute to the health of the financial arrangement by avoiding excessive charges, unnecessary services, and in particular regard to Blue Cross, avoiding lavish hospitalization with its high costs. With this mutual restraint the success of the Plans would be assured and something would have been done to slow the continuing increase in the cost of health care.

We believe Blue Shield has done its part well in maintaining at a satisfactory cost an arrangement beneficial to us all. Changes have been made from time to time. Now in process of development is an improved plan with a much broadened scope of subscriber benefits, which would pay to the physician his "usual and customary fee" instead of an arbitrary amount listed on a fee schedule. As more and more of the health dollar is expended through third party purchasers such as Medicare, Medicaid, and group arrangements, Blue Shield must take particular care that there is a satisfactory return on the purchasers' money.

There is real danger to the stability of

the Plan in the not infrequent abuse of its services by participating physicians, with consequent increase in total costs. Let us hasten to say that the abusers are not in great number; if they were, we would fear for the integrity of our entire profession. Yet some of the examples of abuse are so flagrant that one must wonder about the consciences of some of our members. Cases brought before the Review Committee of Blue Cross and Blue Shield include some startling instances—the prostatic surgery performed two months after the patient was enrolled; charges of over \$14,000 for prolonged treatment of the burns of one patient (estimated by the Committee to have a fair value of \$2,200); a bill of over \$4,800 in a case for which the Committee recommended \$950 as a fair payment; five visits a day to a chronic arteriosclerotic patient; a total of over \$1,600 for a month's routine attention to a patient with arteriosclerotic heart disease and emphysema; and so on. It is impossible to understand the attitude of the physicians concerned.

The Review Committee has a thankless but most important job. If some of our members are unwilling to deal honestly with themselves and the Plans, the Committee must take a firm stand to save the profession as a whole from the effects of the sins of a few of its brethren. And when the going gets tough, the Review Committee of Blue Cross and Blue Shield won't be left standing alone. If need be, the aggrieved party in dispute over an unconscionable charge will press for relief from the Mediation Committee of our Association. There our integrity will be preserved.

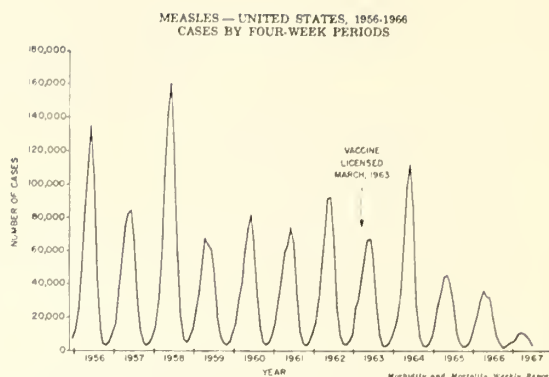
At a recent meeting of the Council of the South Carolina Medical Association, the Mediation Committee was instructed to take a firm stand on the various phases of over-utilization.

Fading Measles

The eradication of measles as a dangerous and widespread disease was promised some short time back by the development of a safe and satisfactory vaccine and indeed it has seemed to be very effective. Mindful of the well known periodicity of the condition, skeptics wondered whether we might have been going through a normal decline of the curve of incidence, and suspected gloomily a return in force to nullify the high hopes.

From the vigorous use of vaccine in this state it is estimated that about 95 per cent of school children and 65 per cent of pre-school children are immune to measles.

The dramatic drop in incidence and mortality as a result of the public health movement to eliminate measles seems



clearly to indicate that the disease is fading out as a problem of consequence. The consistent decrease in the reports of incidence points to a great permanent reduction, and perhaps, a practical elimination. To insure the permanency of this happy state, there must be no letup in the efforts to insure widespread inoculation.

50 YEARS AGO



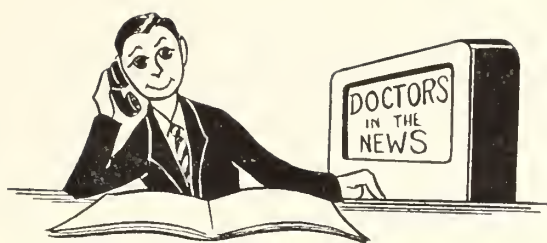
January 1919

This was a special issue devoted to the activities of the State Board of Health. During the year previous there had been an extensive epidemic of cerebrospinal meningitis over the state and the beginning of the pandemic of influenza which was to continue for some time to come. It was noted too that there had been 75 deaths attributed to measles, 171 to cerebrospinal meningitis and about 4,000 to influenza. Pellagra still provided a great number of fatalities, having added 497 to the total. Typhoid fever was also still active with 365 deaths. Whooping cough gave 225 fatalities.

REQUIEM

By Robert Quinn, M.D.

After the end, for lack of eloquence,
Or, perhaps, subtly, in my own defence,
I say, "We did everything we could do"—
My God—do you suppose it's true?



Dr. C. Warren Irvin Jr., a Columbia cardiologist, has been chosen as a vice president of the American Heart Assn. **Dr. Charles N. Wyatt** of Greenville was honored recently with the announcement that two rooms in the new St. Francis Community Hospital to be erected soon will bear his name. At ceremonies honoring Dr. Wyatt a portrait was presented to him. **Dr. Harrison L. Peeples** of Estill, a trustee of the Medical College of South Carolina, was selected president-elect of the S. C. chapter of the American Academy of General Practice. **Dr. Thomas C. Rowland Jr.** has joined **Dr. John D. Bunch Jr.** and **Dr. Julian A. Salley** in the practice of obstetrics and gynecology at 2009 Hampton Street in Columbia. At the 54th annual clinical congress of the American College of Surgeons, **Dr. William Childs Cantey** of Columbia was re-elected American College governor from South Carolina and was chosen to head the committee to elect regents to the College's board.

Dr. Peter C. Gazes of Charleston, president of the South Carolina Heart Assn.,

recently spoke to industry leaders at a luncheon in Aiken. **Dr. Michael J. Ryan Jr.** and **Dr. Charles C. Ross**, both stationed at the Naval Weapons Station, are practicing general medicine part-time in Moncks Corner. **Dr. H. S. Harrison** of Hartsville has been selected by the American Academy of Pediatrics to serve as a Head Start consultant in that area. The Board of Trustees of Conway Hospital has announced the appointment of **Dr. Marshall Sasser** to the active staff of the hospital. He will engage in the practice of urology. A son of the late Dr. Archie Sasser, Dr. Sasser served his internship and residency at Denver General Hospital, Colorado. **Dr. Malcolm B. Cook** has been elected a director of the S. C. Chapter of the American Academy of General Practice. **Dr. William C. Elston** of Spartanburg, who has recently returned from service in Vietnam, spoke at the annual meeting of the Visiting Nurse Assn. in Spartanburg. A review committee of the AMA recently approved a child psychiatry fellowship program at the William S. Hall Psychiatric Institute.

Pathologists Meet

At a November 15, 1968 meeting of the South Carolina Society of Pathologists at the Wade Hampton Hotel in Columbia, S. C. the following officers were elected for 1969:

President: **Dr. DuBose E. Dent, Jr.**,
Columbia S. C.

Vice President: **Dr. Donald G. Kilgore, Jr.**,
Greenville, S. C.

Secretary Treasurer: **Dr. Christopher H. Magruder**,
Greenwood, S. C.

Executive Committee (member at

large): **Dr. Gordon R. Hennigar**,
Charleston, S. C.

Dr. Robert C. Harsh, Rock Hill, S. C., is councillor for South Carolina to the American Society of Clinical Pathologists, and **Dr. Donald G. Kilgore, Jr.**, Greenville, S. C. is the Assemblyman for South Carolina to the College of American Pathologists.

Legislation for registration and licensing of laboratories was one item among several considered at this meeting.



Medical College of South Carolina

Drs. William H. Lee, Jr., Peter Hairston, Dallas H. Dalton, Jr., Edward F. Parker, John P. Sutton, and Norman Cooper attended the 54th Annual Clinical Congress of American College of Surgeons in Atlantic City, N. J. on October 14-19. Dr. Dalton presented a paper entitled, "Influence of Massive Glucocorticoid Administration on Myocardial Inotropism," (Dalton, Hairston, Lee). The exhibit, "Dextran, Mechanism of Effect and Clinical Application," produced by Drs. Lee, Hairston, and Cooper and sponsored by Pharmacia Laboratories, Inc. and the Medical College of South Carolina, was shown. Dr. Parker moderated a panel on Cancer of Esophagus.

Dr. Lee spoke on "The antithrombotic properties of dextran, experimental and clinical" at the University of Miami Seminar on Thromboembolic Disease, in Miami, Florida, November 7.

Dr. Jack E. Arrants attended the 15th Annual Meeting of Southern Thoracic Surgical Association in San Juan, Puerto Rico and presented the paper, "Esophageal Replacement with Interposed Jejunum" (Arrants, Dalton, Lee, Harison) on November 14-16.

Dr. William H. Lee, Jr. gave a talk on "Antithrombotic Properties of Dextran" at a seminar on Clinical Application of Dextran at the Massachusetts General Hospital, Boston, Mass., on November 18.

Dr. Peter Hairston presented a paper, "Massive Corticosteroids: Effect on Myocardial Inotropism" (Hairston, Dalton, Lee) at the 41st Scientific Session of the American Heart Association in Bal Harbour, Florida, November 21-25.

Dr. Hairston spoke at the National Academy of Science in Washington, D. C. on "Clinical observations on use of hydroxyethyl starch," November 7. This summarized three years of clinical investigation by the Division of Thoracic Surgery on the clinical use of hydroxyethyl starch.

Dr. John E. Mahaffey has been elected by District 8 (Southeast) as Alternate Director of the American Society of Anesthesiologists.

Dr. Grady Hendrix spoke to the Kershaw County Medical Society on "Coronary Arteriography" October 21.

Dr. John Manos spoke before the S. C. Nurses' Association, The Nurse Practice Council Workshop in Charleston, S. C. October 1. The topic was "Communicable Disease Today."

Dr. Manos spoke before the Spartanburg Workshop on "The Infections Committee in a General Hospital" on October 2.

Dr. Donald Hiers was recently certified in Neurology by the American Board of Psychiatry and Neurology.

Dr. John A. Moncrief, Professor of Surgery and Director of the Cancer Clinic here at the Medical College of South Carolina, was recently presented the Legion of Merit award at the Brooke Army Medical Center by Major General Laurence A. Potter, commanding general, BAMC. Dr. Moncrief is internationally known as a leader in surgical research, particularly in the field of burns.

Dr. Robert Hagerty read the paper "Augmentation Pharyngoplasty" (Hagerty, Hess, Mylin) at the meeting of the American Society of Plastic and Recon-

structive Surgeons, Inc. held in New Orleans October 27-30.

Dr. Melvin H. Knisely, Professor and Chairman of the Department of Anatomy, has been named a Fellow of the American Association for the Advancement of Science.

Dr. Ramsey Mellette was lecturer at Child Psychiatry Seminar for Non-Psychiatrist Physicians held at Self Memorial Hospital, Greenwood, S. C. on October 22. The topic of the lecture was "Two Thousand Child Psychiatric Referrals—the Primary Physician's Role."

The Psychiatric Department of the Medical College of South Carolina has a residency opening in the NIMH sponsored General Practitioners Program available now.

Candidates must be a graduate of a United States medical school and have been engaged in non-psychiatric training or practice for at least four years since internship. The stipend is \$12,000 per year. Effective July 1, 1969 an additional \$500 per dependent will be added. This psychiatric residency training program is a fully approved three year program. Please submit inquiries to Dr. William C. Miller, The Medical College of South Carolina, Charleston, South Carolina.

Some Concepts of Idiopathic Thrombocytopenic Purpura. Samuel K. Morgan, M.D. (Charleston) (Southern Med J 61:92-93, Jan. 1968). Idiopathic thrombocytopenic purpura is defined as a hemorrhagic disorder characterized by reduced platelets, 100,000/cu mm or below, and overt cutaneous purpura. The bone marrow usually contains normal or increased numbers of megakaryocytes, and no systemic disease capable of causing thrombocytopenia is present. The need to exclude leukemia, other infiltrative disease, and bone marrow failure make bone marrow examination obligatory. Systemic infection and drug toxicity must be excluded by detailed history, careful clinical evaluation, and the necessary laboratory studies.

Some recent ideas regarding the etiology of this disease are reviewed.

The use and abuse of current therapy, including fresh blood, plasma, platelet concentrate, steroids, immunosuppressive agents, and splenectomy are discussed. It is emphasized that unnecessary transfusions, the excessive use of steroids, and early or unnecessary splenectomy should be avoided.

Device for Creation of a Stable Splice for Electrodes of Cardiac Pacemakers, Peter Hairston, M.D., Thomas S. Hargest, B.A., and William H. Lee, Jr., M.D. (Charleston), Surgery, 63; 1039-1041, 1968.

This article describes an instrument that was developed for creating a stable conductive electrode splice or connection for cardiac pacemaker electrodes. The instrument is a crimping device with several unique features, but the most prominent is the Certi-Crimp ratchet which holds simple splice barrels over the helical electrode wires of the pacemaker that have been divided purposely or have been inadvertently disrupted. The instrument is an adaptation of a standard terminal and splice crimp tool developed and manufactured by AMP Incorporated, an electrical firm in Harrisburg, Pennsylvania. Clinical experience with the instrument utilized for electrodes splicing totaled eight cases. A reliable stable splice was obtained in all cases and in no instance did the splice require further specific attention.

THE REGIONAL MEDICAL PROGRAM

For several years prior to 1965, health agency personnel at all levels wandered through a forest of fragmentation of health services and categorization of programs. Duplication of effort was more commonly the rule than the exception. Personnel and funds were assigned to specific programs with narrow boundaries. Expression of concern over abundance in some program areas and needs in others reached a peak in 1964 and 1965 which resulted in Congressional Legislation. Public Law 89-239 was passed in 1965 and is known officially as the Heart Disease, Cancer, and Stroke Amendments to the Public Health Service Act. This Act is more commonly referred to as The Regional Medical Program. The Program is unique in the fact that it is designed to provide a mechanism of attack against the three leading causes of death in this country today, namely, heart disease, cancer, stroke, and related diseases through focusing upon the source of these problems. It is a program which necessitates planning and initiative at the local level. Results can come only from the recognition of needs by local people and their desire to see these needs met. The Regional Medical Program is in no way intended to supersede or replace existing programs or methods of delivery of health care. Rather it has been developed to augment and supplement these programs and methods to assure an efficient coordinated effort in our fight against disease and premature death.

In South Carolina, The Regional Medical Program was established in 1966 with the selection of an Advisory Group having broad geographic and professional representation and the acceptance of state boundaries as appropriate jurisdictional limits. Some of the cooperating agencies involved in The Regional Medical Program are the South Carolina State Board of Health, South Carolina Heart Association, South Carolina Hospital Association, and the South Carolina Nurses' Association.

An office was opened in Charleston on the campus of the Medical College of South Carolina. The initial planning grant of \$65,906 was awarded in January of 1967 and a supplemental grant to this was awarded later the same year. Also during 1967 planning study groups met to discuss the broad needs in South Carolina in continuing education for physicians, the role of community hospitals, heart disease, cancer, stroke, and the allied health sciences. The findings of these studies along with related data were discussed by the Regional Advisory Group and resulted in a definition of priorities which set the momentum and direction of future program activity.

The staff was gradually enlarged in order to implement these plans. This expansion permitted broad personal coverage of the state to explain the purpose of the program and offer methods to local people in the preparation of grant applications. By December, 1967, twenty two grant applications for operational projects were started, of which twenty were subsequently approved by the Advisory Group for submission to the Division of Regional Medical Programs. Individual projects include coronary care unit training in community hospitals, expanded activities of existing heart and cancer clinics, demonstration projects in care of stroke patients, and a recruitment program. This operational grant application consisting of the twenty component projects was submitted in February of 1968. In the meantime, the South Carolina Regional Medical Program received approval of its second planning grant application in the amount of \$464,175.

The year 1968 has been witness to additional signs of progress and understanding. A continued expansion of central staff has necessitated location in larger facilities. During the spring, the House of Delegates of the South Carolina Medical Association approved in principle the program as now conceived. Seventeen of the

twenty operational projects were awarded \$2.3 million to enable operation over a three year period; in addition, eleven supplemental operational projects have been approved by the Regional Advisory Group and submitted to the Division of Regional Medical Programs for review.

A staff section on continuing education and communications has recently been created and will serve to strengthen program efforts in this area. An increase in planning and operational funds is anticipated for the coming year. Numerous proposals currently under development will culminate into specific operating projects. Thus, the outlook for the future is continued expansion of program activities and increased participation by the health professionals, institutions and agencies of South Carolina.

In summary, the Regional Medical Program can prove to be of vital importance

to the health of many citizens of South Carolina. The fact that it will function only according to the needs of the various communities as determined by local people will make it even more valuable.

For further information about the Regional Medical Program, write to:

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Editor's Note: This is the first in a series of articles that will examine the role of the South Carolina Regional Medical Program and its relationship to the physician in South Carolina.

A one-day meeting similar to those held in recent years will be held in Columbia, Sunday, February 16, 1969. The program will include subjects of general interest to the profession. It will be similar to programs of previous years which have included discussion of Blue Cross-Blue Shield matters, Federal programs, Health Insurance, the Regional Medical Program, AMA activities, the Legislative Scene and other pertinent matters.

These meetings are open to all interested members, not only the society officers. The Association provides a luncheon. Those who plan to attend the luncheon should notify Mr. M. L. Meadors, 113 N. Coit St., Florence, S. C. 29501.

A complete program will be sent to all those who are interested.



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EMERGENCY HEALTH PROGRAMS

The Division of Emergency Health Services helps states and communities cope with emergency health programs created by disasters, lending assistance with both advance planning and postdisaster recovery efforts. Through the division's programs, the Public Health Service provides supplies, equipment, consultation and guidance upon the request of a state or community health department.

Model plans for states and communities are made available and the Division offers additional assistance as planning to cope with disaster health problems continues.

Community hospitals, to which injured disaster victims naturally turn, are given the opportunity to obtain critical medical supplies and equipment that make it possible for them to care for a greatly expanded number of patients in time of disaster. There are two basic inventory expansion programs: the Packaged Disaster Hospital Program, which enables a hospital to increase its capability by an additional 200 beds; and the Hospital Reserve Disaster Inventory Program, which provides a 30-day backup stock of medical supplies for disaster casualty care. South Carolina has 23 hospitals in the first category and 18 in the second.

To aid in the effective use of these hospitals and inventories, the division conducts extensive training and demonstration programs.

Negotiations with selected hospitals, with priority based on estimates of the hospitals' vulnerability and potential usefulness in a disaster, were begun in 1967. More than 1,000 hospitals have now signed contracts to participate in the inventory expansion program.

The Division's recently initiated Natural Disaster Hospital Program is designed to increase the emergency medical services capabilities of sections of the country which experience a high incidence of natural disasters. An NDH is a portable 50-

bed unit of essential medical supplies suitable for short-term treatment of disaster casualties. NDH's have now been placed in the Oklahoma-Kansas-Nebraska "tornado belt" and the Florida "hurricane belt."

The Division's Medical Self-Help Training Program provides information and training that will help prepare people for survival in time of natural and national disaster when the services of a physician or allied health personnel are not available. The national goal of the program is to train at least one member of each American family in Medical Self-Help. Over 220,000 persons in South Carolina have been trained.

The Hospital and Ambulance Services Program of the division promotes standards of emergency transportation and care of victims of accidents and sudden illness. This program is concerned with patient care aimed at minimizing the consequences of accidental injury through improved methods of early management and treatment, and through community organization of services to bring required care to the patient at the site of the emergency, during transportation, and in the hospital emergency facility.

Most metropolitan areas are not adequately prepared to provide prompt and complete emergency health and medical services, and very few hospitals are prepared to activate and sustain the greatly expanded emergency operations necessary for the proper management of mass casualties. The most common deficiencies are lack of leadership, of comprehensive planning, and of communications.

During the last year, the Division of Emergency Health Services has provided direct assistance to state and local health departments in 32 disasters, ten of which were declared major disasters by the President. They included hurricanes, floods, tornadoes, fires, power failures,

blizzards, civil disturbances, a bridge collapse, and a train collision.

The South Carolina State Representative of the Division of Emergency Health

Services is Mr. A. A. Bushouse, J. Marion Sims Building, Columbia, S. C. 29201. His telephone number is (803) 758-5560.

THE MONTH IN WASHINGTON

The Nixon Health Program

Richard M. Nixon will take over as President pledged to oppose national compulsory health insurance and federal control of physicians' fees. Highlights of his position on health care issues:—

Federal Role in Medicine

The role of the federal government in medicine should be supportive, never dominating. It should serve as a catalyst and supplement private efforts only as needed.

Medicare

Although the program has been plagued by financial and administrative problems, it offers good potential if wisely administered.

Medicare must provide needed services at the lowest possible cost. The program could be endangered by a continuing escalation of costs.

More effort is needed to reduce dependence on costly hospitalization through better use of extended care facilities and increased use of outpatient care. Also needed is a re-examination of reimbursement formulas and experimentation with financial incentives to assure that the program encourages efficiency at all levels.

Medicaid

I favor the basic philosophy of medicaid—that of helping medical indigents who need aid to meet medical expenses. Unfortunately, the program has fallen short of its expectations. . . .

What is needed is a careful reassessment of Medicaid, especially at the local level, with full professional guidance, and emphasis on advice from physicians. There also is a need for simplification of literature and application forms.

National Compulsory Health Insurance

I oppose a national compulsory health

insurance program because I do not want to lower the quality of medical care in the United States. Also, new health programs should be geared only to persons in need. . . .

I want to see that every individual who needs medical care is able to get it. But I want it to be good medical care. That's why I want to keep the doctors free from government control as much as possible and oppose extension to a national compulsory health insurance program for everyone.

Compulsory Areawide Health Planning

I oppose compulsory areawide health planning. We can't assure communities better health planning just by making such groups compulsory. Areawide planning should be left to state and local determination.

Federal Control of Physicians' Fees

I oppose federal control of physicians' fees. Our system is an open, competitive market, assuring an individual the prerogative of setting a value on the services he performs. I would be as opposed to infringing on this right by regulation of physicians' fees as I would be to regulating fees charged by the members of any other profession.

Department of Health

As President, I intend to establish a Commission on Government Reorganization to study thoroughly ways of increasing efficiency in government organization as well as making it more responsive to the people.

Mental Health

We must develop new methods of treating the mentally ill. . . .

Tax Deductions for the Aged

The 100 percent income tax deduction for non-reimbursable drug and medical

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FEBRUARY, 1969—VOL. 65 NO. 2

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The views expressed in this publication are those of the writers and do not necessarily reflect the opinions of the South Carolina Medical Association.

Contributions of Original Articles

Length—Short articles of about 2,500 words (about 8 typewritten pages, double spaced) are preferred. Longer articles ordinarily will defer to the shorter ones in schedule of publication.

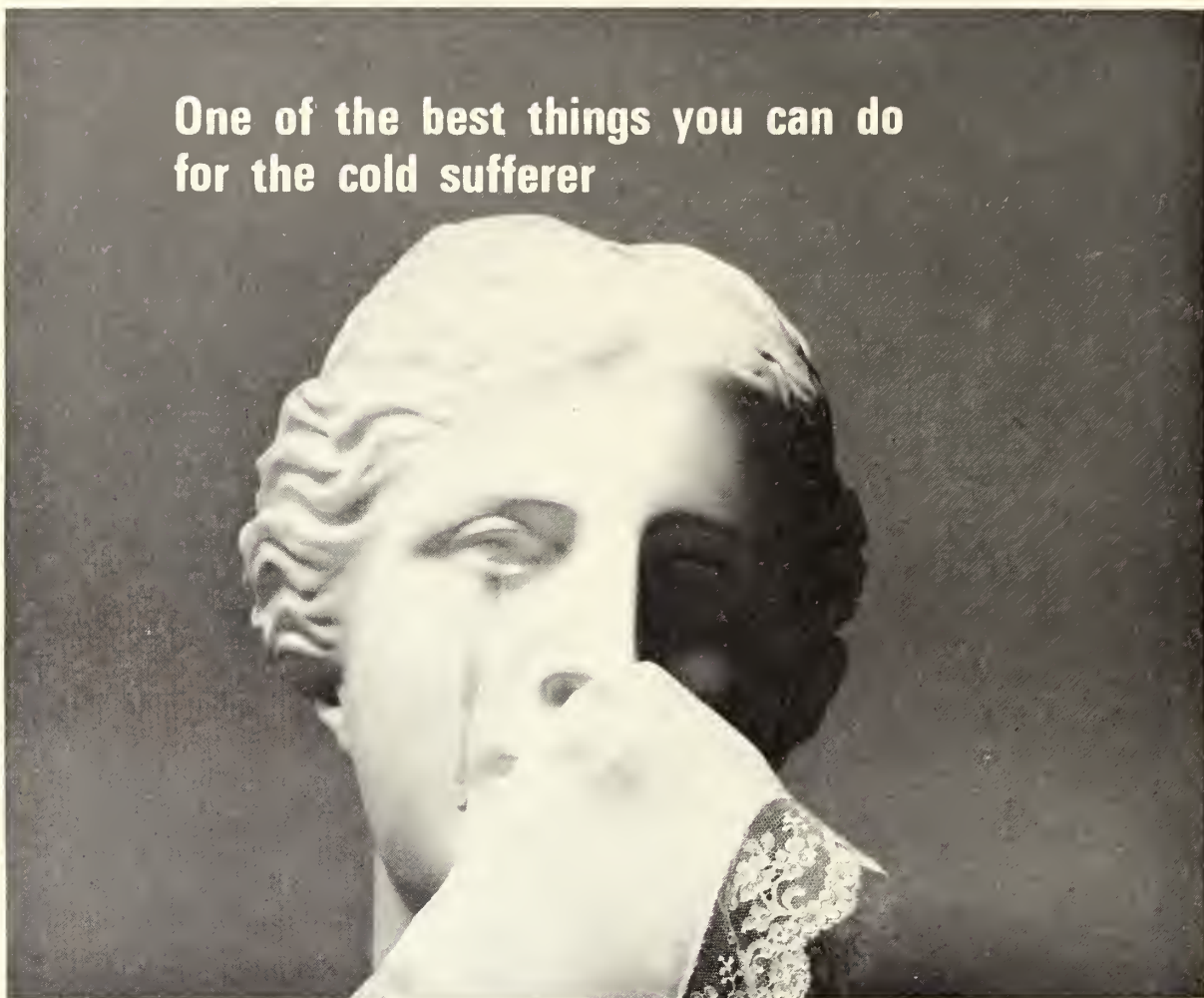
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Illustrations—Ordinarily publication of 4 small illustrations or the equivalent accompanying an article will be paid for by The Journal. Any number beyond this must be paid for by the author except under unusual conditions. Illustrations should be sent as glossy prints or graphs in black ink with lettering large enough to show after reduction.

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FEBRUARY, 1969

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THE PROBLEM OF THROMBOEMBOLISM AFTER HEART VALVE REPLACEMENT

DALLAS H. DALTON, JR., M.D.
JACK E. ARRANTS, M.D.
PETER HAIRSTON, M.D.
WILLIAM H. LEE, JR., M.D.*

Perfection of modern techniques in cardiovascular surgery has made replacement of diseased cardiac valves an almost routine operation. Many patients are now being followed by private practitioners and clinics around the state for post-hospitalization care. Although hemodynamically normal, these patients are in constant danger from thrombus formation on the prosthesis with systemic embolization. This is a particular hazard for those patients having mitral valve replacement, since the incidence of emboli is as high as 60 per cent in some earlier non-anticoagulated series of patients. Emboli from aortic valve prostheses are less frequent, however, they are still a hazard, and although continuing improvement in valve design and materials will probably decrease the risk, every patient now living with an artificial heart valve is a potential candidate for thromboembolic complications. The incidence of thrombosis on prostheses with suture line leakage is so great that re-operation is almost manda-

tory. Of 96 patients with valve replacement at the Medical College of South Carolina, all of whom were given anticoagulants, nine (9%) had emboli, three fatal. Most of these occurred when the patient's Coumadin level (as manifested by prothrombin activity) was not adequate.

Symptoms of systemic embolization depend on the distribution of emboli, and many of them are cerebral. Extremities may be involved and rarely so may coronary arteries. Since the embolizing particles are usually small, about half of the patients recover completely. However, there are fatalities. Most emboli are not associated with endocarditis, but, if fever or anemia is present, blood cultures should be taken prior to initiating antibiotic therapy.

Prevention is the best treatment for thrombosis in this patient group, and is accomplished by systemic anticoagulation. Prothrombin depression, using Coumadin, warfarin or other prothrombin depressant drugs, is begun on the third or fourth postoperative day and dosage adjusted to maintain the prothrombin time at 20 per

*From the Division of Thoracic Surgery, Medical College of South Carolina, Charleston, S. C.

cent activity, plus or minus four per cent. This usually requires a daily dosage varying from 2.5 to 10 mg of Coumadin in different individuals, and following the patient's discharge, prothrombin determinations should be made at least weekly. This interval may gradually be extended if the patient is stable, but should be done as often as necessary to assure an adequate level of anticoagulation. Patients should be instructed regarding the warning signs of over-dosage, such as bleeding from the gums or urinary tract, melena or easy bruising. Factors which potentiate prothrombin depression include debilitation, alcoholism, renal insufficiency, poor liver function, high fat diet, diarrhea, and laxatives. Salicylates in any form, broad spectrum antibiotics, barbiturates, quinine, quinidine, ACTH and adrenocorticosteroids all potentiate bleeding in patients with depressed prothrombin time, and very care-

ful management of Coumadin therapy is mandatory. At present we are using dextran 40* in addition to Coumadin in an effort to reduce valve thrombosis. Patients are given initial doses of the drug while in the hospital. Following discharge, they receive dextran 40* (7 ml/kg. body weight) IV once weekly from their private physician in addition to the usual Coumadin dosage. Coumadin over-dosage is real and cannot be ignored. Patients with hemorrhage and prothrombin time over 40 seconds should be given vitamin K preparations such as Mephyton I. V., 25 to 50 mg. However, if no bleeding is present, omitting Coumadin for two or three days will generally control the Coumadin excess satisfactorily.

Until new valve prostheses are developed which are resistant to thrombosis, anticoagulation should be routine for all patients with cardiac valve prostheses except those in whom the risk of hemorrhage exceeds the risk of embolization.

*Supplied as Rheomacrodex by Pharmacia Laboratories.

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Tuberculous Bronchiectasis—E. F. Parker, L. E. Brailsford, and D. B. Gregg (Charleston), *Amer Rev Resp Dis* 98:240-249 (Aug) 1968.

A group of 36 patients who underwent operative treatment for tuberculous bronchiectasis has been compared with a group of 29 patients with a similar disease who did not receive operative treatment. Comparisons of age, sex, symptoms, chest x-rays, and bronchograms revealed the two groups of patients to be roughly similar. The operative mortality rate of 2.8%, reactivation rate of 3.4%, and lack of pulmonary symptoms in 80% of the patients in the operative group are contrasted with a mortality rate of 10%, reactivation rate of 10%, and the presence of debilitating symptoms in 24% of the patients in the nonoperative group. The criteria for selection of patients for excision of areas of tuberculous bronchiectasis are given.

PESTICIDES AND PESTICIDE HAZARDS IN URBAN HOUSEHOLDS

J. F. FINKLEA, M.D.**

J. E. KEIL, M.S.†

S. H. SANDIFER, M.D.‡

R. H. GADSDEN, Ph.D.°

Physicians, industry, and the general public have a vested interest in the safe use of the chemical pesticides which have been of unquestioned benefit in agriculture and disease control. Acute pesticide poisoning has, however, caused substantial morbidity and mortality among South Carolina children, particularly Negro children.¹ Moreover, general population pesticide exposure has caused public controversy, as well as public concern.² Prior to this study, surprisingly little has been reported about either the use or the potential hazard of household pesticides.^{3,4}

Methods

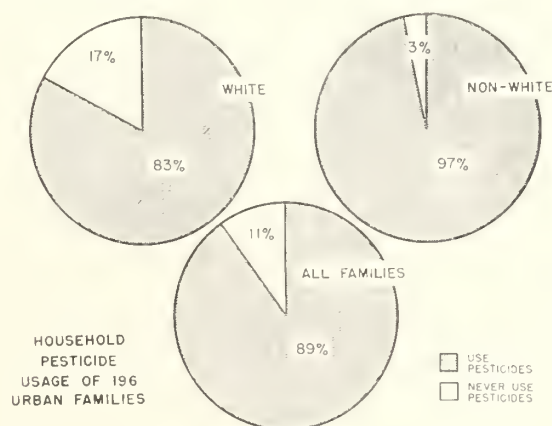
Two survey areas were chosen by probability sampling from Charleston, South Carolina, census tracts. One predominantly Caucasian, middle-class neighborhood contributed 121 families, while a poorer, predominantly Negro neighborhood contributed 75 families. The racial distribution of the survey population approximated that of urban Charleston in the 1960 census.

Interviews were conducted inside the home by one graduate student who was

assisted in the Negro neighborhoods by community health workers. Whenever possible, the interviewer sought to verify the answers of the householder. Comparisons between racial or user categories were by the Chi Square or Fisher Exact Probability Tests.

Results and Discussion

An overwhelming 89 percent of surveyed families used household pesticides.



As shown in Figure 1, non-white families (97 per cent) more frequently used pesticides than white families (83 per cent). One reason for this excess among non-white families was that their homes were more frequently infested by roaches, mosquitoes, and flies. On the other hand, white families had greater concern about gnats, fleas, termites, weeds, and mold. Both ethnic groups seemed equally plagued by ants and rodents.

*Supported by a contract (PH 21-2017) with the U. S. Public Health Service, Department of Health, Education, and Welfare.

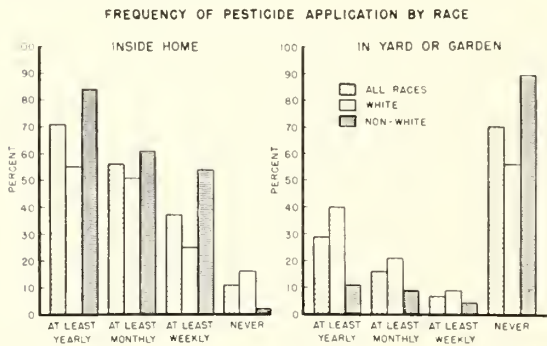
**Associate Professor of Preventive Medicine and Pediatrics, Medical College of South Carolina, Charleston, South Carolina 29401.

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‡Associate Professor of Preventive Medicine, Medical College of South Carolina.

°Professor of Chemistry, Medical College of South Carolina.

Over one-third of all families applied pesticides inside their homes at least weekly during the entire year, as seen in Figure 2. Non-whites applied pesticides inside their homes more intensely than did whites. Yard and garden pesticide application, while less frequent than that inside the home, was found principally among whites. These ethnic differences were probably not real but rather reflected economic differences in housing quality and vocation.



Private pesticide control operators, such as "The Orkin Man", regularly visited 42 percent of all families and were more commonly utilized by white (51 per cent) than non-white (28 per cent) families. Grocery stores were the most frequent places for household pesticide purchase by both races. Seed and feed stores, drug stores, and filling stations were other frequent points of purchase. Safety education could well be instituted at purchase points and should be attractively presented. One pesticide source not mentioned by the respondent families was pesticide obtained by theft. Investigations of hospitalized patients with acute poisoning have shown that a substantial portion of these accidents involved pesticides stolen from a place where the chemicals were properly utilized. These stolen poisons were then stored in unlabeled containers and re-used in an improper fashion.⁵ What is reasonable pesticide use in a tobacco field

is rarely reasonable in the playroom.

Common sense safety precautions were largely ignored by both white and non-white families using pesticides, as depicted in Figure 3: 88 per cent failed to employ locked storage, 66 per cent stored these poisons within easy reach of small children, 54 per cent stored pesticides near food or medicine, and 66 per cent never wore protective gloves while applying pesticides nor washed their hands after pesticide application. Fortunately, industry and regulatory agencies have done much to protect this nonchalant mass of household pesticide preparations are relatively non-toxic and even those products that contain chemicals of significant toxicity are usually quite dilute so that the hydrocarbon carrier may often constitute a greater hazard than the active ingredient.⁶ On the other hand, many yard and garden pesticide preparations, which require further dilution by the consumer, may be quite toxic. Nevertheless, home pesticide use, whether inside or outside, constitutes rather minimal exposure when compared to certain industrial or agricultural occupations.

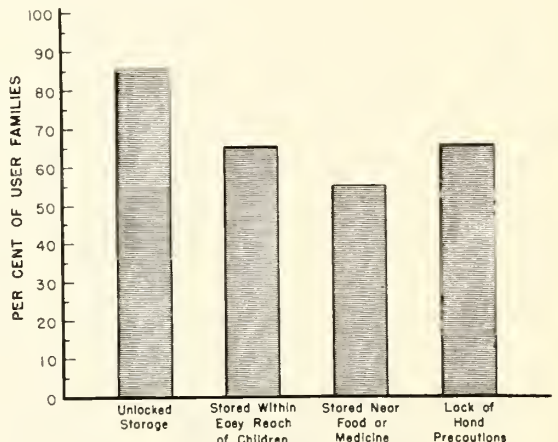


Figure 3 PESTICIDE HAZARD

The prevalence of selected chronic diseases among pesticide user and non-user families was ascertained. As shown in Table 1, there was no significant differences. The active ingredients of many

TABLE 1

Comparison of the Prevalence of Selected Chronic Diseases Among Families That Were User or Non-Users of Pesticides

Disease	Pesticide		Comparison
	Users (172)	Non-Users (22)	
Anemia	2%	9%	NSD
Asthma	7%	9%	NSD
Cataract	6%	14%	NSD
Diabetes	13%	5%	NSD
Emphysema	3%	0	NSD
Glaucoma	2%	0	NSD
Liver Disease	0	0	NSD
Peptic Ulcer	5%	0	NSD

ence between study groups in the family prevalence of anemia, asthma, cataract, diabetes, emphysema, glaucoma, liver disease, or peptic ulcer. Certainly this small survey did not preclude the possibility that pesticides might in fact be etiologically important in these or any other chronic disease. Nevertheless, this fragmentary information was reassuring.

Summary

A household survey of 196 urban families in Charleston, South Carolina, revealed that 89 per cent used pesticides, with one-third applying these chemicals at least weekly during the entire year. Pesticide usage, particularly inside the home, was greater among non-whites than whites. Safety practices were equally inadequate among both ethnic groups. Pesticides were often stored in unlocked areas (88 per cent), within easy reach of small children (66 per cent), and near food or medicine (54 per cent). Two-thirds of pesticide users neither wore gloves nor washed their hands. Sources of purchase of pesticide, especially grocery stores, could become a valuable locus for safety education. The prevalence of selected chronic diseases did not vary significantly between pesticide users and non-users.

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MEETING

The 1969 Atlanta Graduate Medical Assembly is scheduled for February 24, 25, 26 at the Regency Hyatt House and is being sponsored by the Fulton County Medical Society.

ENURESIS

PAUL W. SANDERS, III, M.D.

Charleston, South Carolina

Enuresis is one of the most common and annoying disorders of childhood. Parents become disturbed when the usual corrective measures fail and often they are not sure whether to blame themselves or the child. Enuresis may be a sign of some serious underlying urinary tract pathology or may be classified as a primary entity. The causes suggested for enuresis are legion but the true etiological factors are still lost in a mass of claims and counter-claims.

Some observers believe that the condition finds its origin in purely organic defects of the urinary tract *per se*; while others believe that the condition is primary psychogenic in origin. An alternate view which seems more acceptable in the light of evidence is that enuresis is caused by an inborn, familial constitution toward uninhibited vesical contractions or, in other words, an imbalance between the central nervous system and the lower urinary tract.^{1,2} On the other hand, a case of enuresis may be cured with the correction of some underlying minor pathology such as urethral stenosis. It is for this reason that any child, by the age of four, who is enuretic should have a complete urological evaluation with special attention directed towards the lower urinary tract. However, most enuretics fall into a category where no serious pathology seems to exist. If the evaluation of these children is carried out further and cystometrograms studies are done, it will be

noted that these children generally have a smaller bladder capacity and show uninhibited contractions of the bladder as increments of fluid are added. These children have an imbalance between the central nervous system and the bladder so that rhythmic, uninhibited contractions develop on distention.¹ It is evident that inhibited control emerges at different ages. This variation can be observed in other areas of neuromuscular development with some components lagging behind, for example, learning to walk or stand.

Since time immemorial, there have been a multitude of treatment advocated for enuresis. This includes stretching of the bladder, parasympathetic drugs of all kinds, forcing of fluid and fluid restriction, electrical shock devices with bells, and psychiatric therapy to the child and its mother. However, only recently has a treatment emerged with any success and which tends to support the theory that an imbalance exists between the central nervous system and the lower urinary tract in which uninhibited vesical contractions are produced. In 1959, imipramine was introduced in the treatment of depression. It was soon tried, as were many other drugs, in the treatment of enuresis. The mode of action of imipramine is not fully understood even today. However, it appears to have three separate actions: (1) imipramine (Tofranil) is a cholinergic blocking agent which therefore blocks re-

flex urination as a spinal cord reflex. (2) The drug is a mild cerebral stimulant which may prevent the deepest level of sleep; it appears that enuresis occurs mainly in deep sleep in adults, although whether this is true in children is undecided.³ (3) The drug also acts as an antidepressant. The response in most of the patients has been dramatic, always within the first week of treatment and frequently following the first dose of imipramine. Present evidence indicates that the drug is almost completely safe; the only side effects thus far reported in the literature have been relatively minor symptoms of irritability and nightmares. These effects have been reversible upon lowering the dosage. The usual dosage is 25 to 50 mg at bedtime.

In children who did not respond initially, improvement was brought about by increasing the dosage. Response has also been obtained by varying the time of dosage. For example, children who void after midnight were given the medication at bedtime. Children who void before midnight may have to be given the medication early in the evening, and in some cases the dosage may be split by giving half of the medicine early in the evening and the remainder at bedtime. In some of the favorably responding children, attempted withdrawal after various periods of time has caused prompt resumption of enuresis in about 90% of the cases.

It is unknown at this time how long therapy may be required in children who resume bedwetting on discontinuing the treatment. It seems at present that therapy will be necessary until that time when normal neuromuscular control of the bladder develops. Continued therapy seems warranted at this time because of the gratifying results and the psychological

benefit of being relieved of the annoyance of bedwetting. After the patients have been on imipramine, cystometrograms studies have shown the uninhibited bladder contractions to have subsided.

The use of imipramine is a safe and by far the most effective method thus far reported of controlling benign enuresis in children. It should not be used until urological evaluation is carried out in order that the enuresis can be classified as a benign condition. In resistant cases such as that of psychological disturbance, psychiatric help may be of some added benefit. In a small group of children, enuresis may be a sign of a low grade form of epilepsy and electroencephalograms may be abnormal. These children may be helped by anticonvulsive therapy. If enuresis, like epilepsy, results from a paroxysmal discharge from the brain, imipramine may help because it is chemically similar to the antiepileptic drug, carbamazepine (Tegretol).³ It is my feeling that imipramine creates an increased level of awareness in these sleeping children, thus allowing them to take automatically the proper action to avoid urinating in their sleep.

Summary

The problem of enuresis is a very common and annoying disorder of children which may be a continual nuisance to the child, parent, and physician. All cases of enuresis should first have a complete urological investigation to rule out any urological pathology. Most cases of enuresis, however, seem to be caused by imbalance between the central nervous system and the lower urinary tract. It now appears for the first time that with the use of the drug, imipramine, a safe and effective method is available for the treatment of benign enuresis.

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THE DOCTORS GEORGE LOGAN

JOSEPH IOOR WARING, M.D.

Charleston, S. C.

Shortly before the end of the 17th century George Logan came from Scotland to Charleston. There the Logan family soon became prominent in many fields. A later George Logan was to lose his life in General Francis Marion's command in Revolutionary times.

The two Doctors Logan of Charleston who concern us for their interest in pediatrics were father and son. The first medical George was born at Bacon's Bridge near Charleston in 1751, was sent to England at the age of twelve to pursue his education and eventually completed his formal medical training at Edinburgh in 1773. Since his inaugural dissertation was dedicated to Dr. Alexander Garden of Charleston, distinguished naturalist and physician, it may be surmised that Logan had some preceptorial medical training under the direction of this able fellow townsman.

After graduation George Logan returned to Charleston, but a year later sailed to Europe, where for two years more he pursued his medical studies. This postgraduate experience must have rounded out his medical education effectively. Back at home, he began private practice, becoming also the Parish Doctor at 100 pounds sterling a year, a sum later augmented by 1000 pounds of depreciated Carolina currency. He was among the rather notable group who founded the Medical Society of South Carolina in 1789, became in the next year State Physician, a position of somewhat uncertain nature, and later was appointed Physician to the Orphan House. This last institution had been established in 1790 as a municipal effort said to be the first of its kind in this country.

The achievement of this position at the Orphan House is probably sufficient evi-

dence that Dr. Logan was more than a little concerned with pediatrics. However, this fact had already become apparent at Edinburgh, where he had presented a dissertation "*De Morbis Infantium Arcendis et Curandis*", in whose 44 pages he commented on the important knowledge of the day concerning infants. There was no great originality in the work; much of it might likely be traced to William Cado-gan and other writers of the time. Perhaps its emphasis on prevention of disease was important. The infant, it said, should not be coddled, should enjoy loose clothing, should be given exercise such as is provided by bouncing, and should suffer a daily cold bath—perhaps a somewhat Spartan measure in the Scottish climate. Fresh country air was recommended; air pollution was apparently already becoming a problem.

It noted that for obvious reasons breast feeding was most desirable. The author recognized the value of the colostrum, the first secretion from the mothers breasts. The wet nurse was the next best source of food and was a safe resource, he said. He cited another writer who reported that he "for eighteen full months was suckled by a hard drinking wench, yet got no harm of body or mind thereby". Perhaps the subject even enjoyed this secondhand mild alcoholic tranquilizer in his early life. Milk and water were the next resort, not in arbitrary amount, but "proportionate to appetite". All artificial feeding was recognized as highly undesirable.

Logan's thesis treated only of a few diseases peculiar to infancy e.g. thrush, which was considered to be a horrendous matter fraught with convulsions and other serious symptoms attributed to bad food. Vomits, enemas, blisters, and the bark were appropriate remedies. Hydrocephala-

lus, ("water head") came from various causes, he noted, and was usually fatal in spite of emetics, cathartics, and diuretics, all used in a rather pessimistic spirit. Rickets in those pre-vitamin days was thought to be congenital, promoted by dampness and dirt, and amenable to cold baths and the bark. Finally, teething was not actually a disease, said Logan, but might be of sufficient importance to warrant lancing of the gums, blisters to the feet, and even a bit of blood letting.

The dissertation can scarcely be considered a major contribution. It displayed a pediatric interest which Logan must have carried on into his practice and into his dealings with the 155 Charleston orphans whose interests he served until ill health caused him to remove to Salem, Massachusetts, shortly before he died there in 1793.

George Logan Jr. born in Charleston, January 4, 1778, served five years under Dr. Tucker Harris, an esteemed local practitioner, then went to Philadelphia where he graduated in medicine at the College of Philadelphia in 1801. His dissertation covered "Observations on the Hepatic State of Fever". While in medical school he was a member of the Philadelphia Medical and Chemical Society.

After graduation he returned to Charleston, and by 1810 he had followed in his father's footsteps to the position of Physician to the Orphan House and to the Poor House, which he was to hold with "condescending kindness" for nearly 45 years. In 1812 he almost perished in a fire in which he lost much of his property. He became hospital surgeon to the Charleston naval establishment and also post surgeon for the military and held these positions for many years. The high esteem of his colleagues was evidenced by his election to the presidency of the Medical Society of South Carolina.

George Logan Jr. began writing early in his career. First he published in 1808 the *Medical Pocketbook: summarily com-*

prizing a selection of the useful medicines—etc., a book of 81 pages. The local *Charleston Times*¹ thought that this was an invaluable book for the laity, "families, plantations, and ships". *The Medical Repository*² was less charitable, saying, "We were at a loss to imagine wherefore this compendium of pharmacy and prescription had made its appearance, until we read on the very last page, 'Family medicines of the best quality furnished, and prescriptions cautiously prepared at short notice, an application to Dr. G. Logan Jr.'". There was no indication that the Charleston profession thought that the publication lacked propriety.

Some years later in 1825 Logan published in Charleston his *Practical Observations on Diseases of Children*, a book of 218 pages, probably based largely on his practice among the children of the Orphan House. The sources of his experience may be found in the records of that institution,³ where the story is much that of other groups of children of the times. There he saw respiratory infections, the April and May disease (diarrhea), "fevers and fitts", yellow fever, measles, chin-cough, (whooping cough), malaria, dengue, and scarlet fever. Rheumatism he found more common than was currently expected in his climate. The "creepline disorder" (larva migrans), a skin disease, was common; one orphan boy came to an untimely end from smoking tobacco. Frankly intended for "country residents as well as for practitioners", the book echoes some of the elder Logan's dissertation. George Jr. described jaundice as "yellow gum". He recognized the source of tetanus neonatorum in badly treated umbilical cords. His remedies for various disorders included ipecac, salts, castor oil, calomel, antimony, peruvian bark, seneca snake root, and blisters. Maternal impressions might well produce marks in infants, he thought. Of congenital heart lesions he recognized only the patent for-

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X-RAY FILMS OF THE MONTH

S. E. PUCKETTE, JR., M.D.

MEDICAL COLLEGE HOSPITAL

CHARLESTON, SOUTH CAROLINA



Fig. 1. Mass in stomach outlined by barium.

The illustrations are from an upper GI series performed on a 42 year old male. Seven years previously the patient had undergone a gastro-jejunostomy for a duodenal ulcer. Initially there was excellent relief of symptoms, but three years following the operation, the patient began to complain of recurrent epigastric pain lasting one to two hours. At times the pain would be accompanied by nausea and vomiting. No satisfactory explanation or treatment could be advanced for these complaints until the above X-ray film was

taken during one of the attacks of pain.

The roentgenograms are diagnostic of retrograde jejuno-gastric intussusception. The clinical history is typical for the chronic form of this rare complication of gastric surgery.

Jejunogastric intussusception has followed every type of gastro-enteric anastomosis except the Billroth I procedure. While the afferent loop, the efferent loop or both may invaginate, the efferent loop does most commonly. The interval of occurrence following gastric surgery has ranged from the fourth postoperative day to as long as 30 years later.

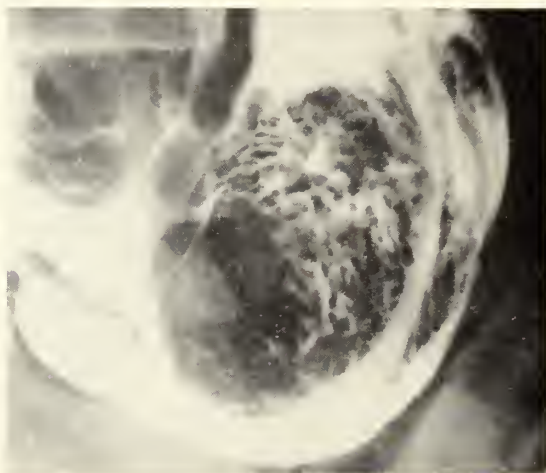


Fig. 2. Spot film of mass in stomach.

In addition to the chronic form described, there is also an acute form. Here

the upper abdominal pain is sudden, of moderate to severe intensity, and usually epigastric in location. Initially it is intermittent and colicky but may become constant. Repeated vomiting soon occurs. The vomitus is at first clear or containing food, then bilious and later bloodstained. This sequence of symptoms follows the progression of the intussusception to strangulation. On physical examination,

epigastric tenderness of varying degree is usually present and in approximately one-third of the cases an epigastric mass can be felt.

Treatment in the acute case is prompt surgical intervention, as the mortality rate is almost 100 per cent if surgical exploration is not attempted. In the chronic cases elective operation will depend on the severity of the symptoms.

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The Doctors George Logan

(Continued from page 37)

men ovale, a fairly common defect. Fevers were not sharply defined, and worm fever was a potentially fatal disorder. Repeatedly eye infection (ophthalmia) plagued the orphans, who were subjected to "division of the turgid vessels of the sclerotic" (the outer covering of the eyeball) as a cure.

A contemporary reviewer in the *Carolina Journal of Medicine, Science, and Agriculture* gave rather scant attention to the book, believing that it was "more particularly written for those who cannot obtain medical aid" and regretting that it arrived too late for proper consideration.

George Logan published later in the *American Journal of the Medical Sciences*⁴ an account of the scarlatina which had been epidemic in the Orphan House in the previous year. He ascribed the termination of the disease to three possible factors; the "returning salubrity of the at-

mosphere", the prophylactic use of belladonna, or to what he called "inoculation for scarlatina", a process which he did not expound.

This article of 1839 appears to be his last pediatric writing. He was to continue his activities as a respected physician for many years. Ill health caused his retirement in 1854, when he removed to New Orleans, to live until 1861. His interest in medicine passed to two of his sons, and to two perhaps better known grandsons. One of them, Samuel Logan, was Medical Director of Confederate General Beauregard's staff. The other, Thomas Muldrup Logan, made a name for himself in the development of medicine in California.

While not profound contributors of new knowledge, a number of members of the Logan family have been figures of some temporary importance in American medicine.

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President's Page



A GUEST EDITORIAL

At a meeting of Council recently the President of The Medical College and one of the trustees were present. Dr. McCord was there to discuss the medical aspects of the Moody Report and inevitably the discussion got around to our doctor shortage and particularly the shortage of family physicians. The Trustee asked Council if we were interested in more emphasis being placed on general practice at The Medical College and wondered if doctors in South Carolina would like the Department of General Practice to be enlarged, strengthened, and more time spent encouraging students to be Family Physicians. There was general agreement among Council that this was a desirable and necessary approach to the physician manpower shortage. It was encouraging to find The Medical College interested in helping to alleviate our critical need for General Practitioners.

Let us all lend our support to the effort being made to set up a strong department of General Practice at the College. If we are to remedy the doctor shortage we must get more students in medical schools. Vast amounts of money and countless hours of time and effort have been expended in the last ten years by various organizations including the AMA and the AMA Woman's Auxiliary in recruiting young people for health careers. Mrs. Wyonia Wagner writing in *M.D.'s Wife* states that, "in 1967 there were 18,250 graduates from our finest Colleges and Universities who had completed the required pre-medical courses and applied to medical schools. Deans of medical schools all agreed that most of these applicants were well trained and qualified to study medicine." Yet only half of them or 9,123 could be accepted.

Now what happened to the 9,127 who were not accepted? Did they go into allied health fields? Not by a long shot! In fact they were excluded. "*M.D.'s Wife*" contacted the personnel director of a large drug firm who admitted that these pre-medical college graduates had all the training needed for some of their best jobs, but stated, "I make it a point never to employ an applicant rejected by a medical school. He will be too antagonistic to doctors." An AMA spokesman stated, "some leaders in the health field feel it best for rejected applicants not to enter fields closely allied to medicine because of latent hostility."

Can you blame these rejected students for feeling angry and hostile? "They have been encouraged to study and pass one of the hardest courses in College and through no fault of their own they are denied the opportunity to study for the career they have chosen." Our job is to develop the Community, County and State support which must be forthcoming if we are to meet medicine's goal "that every qualified student who wants a medical education shall be able to find a place in a medical school." We cannot afford the loss of 9,000 men and women from the health field each year. We need them as colleagues and friends, not as enemies.

J. P. Booker, M.D.

Editorials

The New Baby Doctor

While efforts are being made to augment the supply of physicians, the shortage of doctors in all fields of medicine remains acute. Of the many specialties for which there is more demand than supply, that of pediatrics, one of the most exacting of them all, stands out prominently. An experimental solution to this problem is being offered; its success will require acceptance of a new concept in pediatric practice.

The proposal is to produce, five years after graduation from high school, a "pediatric associate" who will have had two years of premedical education and three years of professional training including one year of internship on an intensive schedule of 48 weeks each year. If he is properly trained, five years after graduation from high school he should be able to take a considerable part of the load off of the pediatric group.

This associate's duties would be strictly defined. He would be employed and supervised by a pediatrician, he would have to pass examinations by a special board, and his activities would be limited to certain conditions. According to a description of this new figure in pediatrics, he would be competent to diagnose and to treat, using a restricted list of drugs. He could treat certain respiratory infections, communicable diseases, accidents, gastrointestinal disturbances, skin disorders, allergic troubles and could undertake supervision of the well child and the new born. It is estimated that this would cover 80 per cent of the practice of the present day pediatrician. The unburdened pediatrician would devote himself to the remaining 20 per cent of problems which his associate would not handle and would have ample time to keep himself abreast of recent advances. If he must keep up only

with those unusual and difficult conditions which fall into the 20 per cent, as a practitioner he will probably not have to do a tremendous lot of intensive studying.

This proposal seems to have certain merit in offering to provide more associate pediatric care for more people and to allow the more highly trained pediatrician proper time to devote himself to the greater problems of his specialty. There may be something gained and something lost. If the supervising physician is to be largely a monitor of the work of his associate, he must inevitably lose a great deal of the personal touch which makes the pediatrician often somewhat different from the general run of other specialists. The relations between director and associate would have to be delicately balanced. One might suspect that the associate might become a bit tired of dealing with the simpler conditions, which have in the past rather bored some pediatricians, and move into that small zone of 20 per cent left to the fully trained practitioner. Not all pediatricians are so busy that they cannot maintain their practices on the old general basis.

The need for an associate would probably be apparent only under certain special conditions of practice and with certain types of pediatricians. It would be difficult to draw a fine line in matters of diagnosis and treatment so that the associate could give full service. It might be that if this kind of practice is developed in any great quantity, pediatricians might lose much of their status, almost certainly much of their personal relationships to their patients. Whether this should be balanced against the benefits which might accrue to the public by virtue of more readily available services, remains to be viewed with a great deal of interest and optimistic concern.

MINUTES OF COUNCIL

SOUTH CAROLINA MEDICAL ASSOCIATION

Columbia, South Carolina

November 6, 1968

The South Carolina Medical Association Council met at the Blue Cross-Blue Shield Headquarters on November 6, 1968. The meeting was called to order by Dr. John P. Booker, Chairman.

Present: Dr. Joel W. Wyman, President; Dr. C. Tucker Weston, Vice President; Dr. William L. Perry, President-Elect; Mr. M. L. Meadors, Executive Secretary; Councilors Dr. Waitus O. Tanner, Second District; Dr. Martin Teague, Third District; Dr. John P. Booker, Fourth District (Chairman); Dr. John D. Gilland, Sixth District; and Dr. Harold P. Hope, Ninth District. Others present were Dr. Joe Cain, Delegate to AMA; Dr. Hal Jamason, President of S. C. Medical Care Plan; and Dr. D. Strother Pope, Secretary, SCMA.

Dr. Booker called on Dr. Tucker Weston to open the meeting with prayer.

Dr. Booker announced that the meeting had been called for the purpose of discussing the Moody Report. Dr. Booker stated that an expression from the medical profession about the health aspects of the state was desired as the legislature is going to want to know its ideas, and the medical profession wants the legislature to know them. He stated that Mr. Meadors had been asked to study the health aspects carefully and give Council the salient facts in order that it might appoint a committee to work out a recommendation to the Governor and the legislature when it convenes in January.

Dr. Wyman introduced Dr. William McCord, President of the Medical College, who discussed the Moody report with Council. Dr. McCord stated that he was not particularly impressed with Dr. Boowick's knowledge of health programs. Dr. Boowick spent only two hours at the Medical College, and had made some 26 recommendations which Dr. McCord had broken down for discussion. Some 18 of them are fairly adequate and fairly accurate. (Page 318). Six or eight of them are completely inadequate.

The recommendation that the internship, residency and graduate programs at the Medical College be substantially enlarged; the college is doing the best it can on this already. The recommendation that attention be given to the improvement of the Medical College's autopsy procedures: Dr. McCord stated that it was his opinion that the college's autopsy procedures now are quite adequate. They run about 58%; Duke runs about 57%; North Carolina runs about 59%; Johns Hopkins runs about 64%, and the Medical College of Virginia runs about 54%. Our autopsy rate is average for hospitals in our area. The Moody Report shows that the 22 top-ranking non-federal hospitals show rates from 82% to 100%. The

only way we could have 100% is to be a federal hospital and not allow the patients to have a say-so in the matter.

With regard to the recommendation that steps be taken to affiliate with the University of South Carolina, we are already affiliated with the University and with Clemson in six or eight subjects. There is a trend not to affiliate with universities now. There are 12 "free standing" institutions which are not affiliated with universities. The trend is to set up Medical Centers. Of the total 96 medical schools, 44 are separated from universities by being in a separate town. The trend is to move away from the universities and become an entity.

As to the recommendation that a further effort be made to enlarge and improve the research program, Dr. McCord concurs.

As to the recommendation that every effort be made to improve the quality of South Carolina hospitals, acting jointly with the State Board of Health and the Medical College, Dr. McCord doesn't like the inference.

In reply to a question by Dr. Booker, Dr. McCord said that the problem of obtaining grants was not a question of reaching a university status but one of space. The Medical College desperately needs more space.

In reply to a question by Dr. Cain, Dr. McCord stated that they were not in a position to request grants until they had more space.

In reply to a question by Dr. Booker, Dr. McCord stated that he thought this is the year to close the School of Pharmacy at the University and transfer it to the Medical College in Charleston. It is his opinion that pharmacy should be taught in a medical school.

In reply to a question by Dr. Booker, Dr. McCord said that the Medical College is actually a university today but not in name.

In reply to a question by Dr. Booker, Dr. McCord said that he didn't know whether they could get the legislature to designate the Medical College as a university or not. It is his opinion that the legislature might be afraid of high-rise dormitories, etc., although there is no such plan. The Medical College now has seven schools.

In reply to a question by Dr. Tanner, Dr. McCord said that the Medical School might telescope some courses up and some down. It might be possible to have some courses 12 months a year, making it possible to complete Medical School in three years rather than four. At a meeting of the Association of American Medical Schools, medical college presidents were told that if they did not take all appli-

cants (we are now taking about $\frac{1}{2}$) for medical school that the federal government would do it for them.

Dr. Booker stated that he thought this was an unfair reflection of the medical situation in South Carolina.

Dr. McCord stated that he thought the Moody Report was unfair.

Dr. Tanner stated that comprehensive health planning and improvement of community health calls for adequate manpower. All such programs are predicated upon adequate manpower.

Dr. McCord does not see any way to improve the manpower condition with a shortrange program.

Dr. McCord stated that the cost of a statewide, radio-linked ambulance network as recommended by the Moody Report would be prohibitive, and actually would serve no useful purpose.

In reply to a question by Dr. Booker, Dr. McCord stated that the college is doing everything it possibly can to improve its post-graduate training. The Medical College is sending teams out to teach in different cities.

Dr. Tanner stated that we have too many of one sort of doctor and not enough of another and asked if there were any chance of working out a quota system.

Dr. McCord does not approve. It is his opinion that the only solution is to graduate more doctors.

Dr. Booker stated that the Moody Report blamed the lack of good internship and residency programs in the state for lack of doctors and stated that good programs would not only keep our own interns in the state but would attract them from other states as well.

Dr. Cain stated it was his opinion that whatever is decided by the Association lies in legislative action, and that the Association should get together on policy and back the legislation which is necessary to carry out such policy. It was his opinion that liaison is better with the Medical College now than it ever has been and we are now in a position to work together and get our ideas in accord. Dr. McCord invited the Council as a whole or individually down to see the story of the college.

Dr. Booker suggested that November 14, 1968, would be a good time. It is his opinion that the Medical Association needs a program of its own in order to refute the Moody Report.

Dr. Wyman stated that unless the State Legislature puts up the money, the Association will have to go through the Regional Medical Program to get it and there is limited money there.

Dr. McCord asked the Council if it knew anything about the Comprehensive Health Planning money and was informed that Council has a committee looking into it.

In reply to a question by Dr. Hope, Dr. McCord said he was preparing an answer to the Moody

Report and he said he would like to ask SCMA to help him with needed legislation.

Dr. Cain suggested that when Dr. McCord has his answer ready, submit it to the Council and get a meeting of minds on it. Dr. McCord said it would be a privilege.

Dr. Booker thanked Dr. McCord for meeting with Council.

Dr. Booker stated that Council was working on the premise that somebody should let the legislature know what SCMA thinks about the Moody Report.

It was Dr. Cain's idea that the legislature doesn't want the Medical College spending money to educate out-of-state students. He asked, first, what sort of recommendation would we like to make to legislature. This is a question of taking care of our own first. Secondly, we are talking about basic health care of the general public. We have been trying to establish a Department of Family Practice in the Medical College. That program did not go the way we wanted.

The lack of general practitioners was fully discussed and the reasons therefor. There is no longer a residency in general practice at the Columbia Hospital. It was thought that the Medical College and SCMA should openly and emphatically support general practice.

It was the opinion of some that the Medical College become a Medical Center rather than affiliate with the University.

Dr. Booker called on Mr. Meadors for his thoughts on the report.

Mr. Meadors stated that he had not seen the report as a whole but the part he had seen seemed to be all right generally speaking. The "Broad Health Recommendations" are divided into five sections, number five of which places further emphasis on the development of incentives for creative leadership. That is exactly what the SCMA wants.

Section 2, Par. 3—that the State Board of Health work with the SCMA toward the improvement of the range, quality and availability of home health services throughout the state. That is a general recommendation but is it one in which Mr. Meadors sees no reason why Council could not cooperate.

Section 2, Par. 12, that the Medical College and the SCMA, acting jointly, develop a plan for increasing the number of directors of medical education. This is a general recommendation.

Dr. Hal Jameson asked what the specific duties of a Director of a hospital are.

Dr. McCord answered that a Director of a hospital secures interns and residents and sees that the educational program is carried out.

Mr. Meadors stated that Section 3, Par. 5—"that the SCMA be requested to convene in the near future a statewide, inter-disciplinary professional forum for the definition of roles and responsibilities of private health practitioners, etc." is a general

recommendation. Rather than turn our back now on all these recommendations, which call for the Medical Association to take the leadership, it seems to me that this offers a good opportunity for us to take a role of leadership and at the same time prove the absence of the necessity for the continued emphasis on the federal program.

Dr. Cain said that if the Association doesn't do something like this, some other groups are going to do it. We should restate the goals which the Association has as best we can. Legislature wants us to do something like this.

Dr. Teague asked if the Association could get a group together to decide what to do.

Dr. Cain said he attended a Regional Health Meeting called together by the Center at McLeod Infirmary. There were only two doctors in that group. This is being done by other groups and SCMA is just sitting by. If somebody else does it, SCMA will not get proper credit or the opportunity to get across what it stands for.

Dr. Perry stated that he attended a meeting in Atlanta on Cost Coordination of Hospital Benefits but didn't get much out of it.

Dr. McCord stated if we could take the Moody Report as authority, we could pick up the ball and carry it.

Dr. Booker remarked that SCMA knows it is lacking. Let them help us relieve the deficiency. SCMA must take an active lead in this thing in order that somebody else doesn't take the lead.

Dr. Perry moved that a steering committee be set up in coordination with that of the Medical College in order to plan a conference on the Comprehensive Health Report of the Moody Report

and whatever pertains to the health of South Carolina. Motion seconded and carried.

Dr. Tanner reported on a meeting of the committee of which Dr. Tucker Weston is Chairman, whose purpose is to draw up a proposed law for the reorganization of the Executive Committee of the State Board of Health. Dr. Tanner feels, as do the rest of the doctors in Columbia, that this is very important legislation in view of certain influences, both local and national, that are being exerted on our state policymakers.

Dr. Booker regretfully announced that Dr. Clay Evatt, Councilor from Charleston, is ill in the Baker Sanitorium. Council passed a resolution wishing for him a speedy and complete recovery.

Dr. Teague stated it was his opinion that something should be done to get the medical profession over its apathy. The best way to do this is to get active doctors on committees.

Dr. Perry moved that a roster be set up of doctors who would take an active part on committees of the SCMA and that the roster be set up by writing to the presidents or secretaries of all societies for the names of doctors in their respective societies who could be placed on committees of the SCMA to carry out its functions properly and who are willing and able to serve. Motion amended by Dr. Cain to send a card to each member of the Association asking if he is interested in serving on a committee, if so, what committee, etc., and have them sign and return the card. Dr. Weston moved that both be done. Motion carried.

Meeting adjourned.

D. Strother Pope, M.D.
Secretary

50 YEARS AGO



February 1919

A paper on "Intussusception" by Dr. R. M. Politzer, then of Charleston, appeared in this issue. Another paper reported very satisfactory results in influenza patients from the use of bicarbonate of soda.

TITLE 19 AND THE G. P.

The South Carolina Chapter of the American Academy of General Practice in meeting assembled at Charleston, South Carolina on November 15, 1968, passed the following resolution:

Whereas, It has come to our attention that many of our members have experienced difficulty in dealing with the many problems that confront us in rendering health care to our patients under Title 19.

Whereas, many of the attempts made by our members to work out solutions have been frustrated because of inadequate communication and rapport with the single agency now responsible for Title 19 in South Carolina.

Whereas, the program now is being operated as a payment program rather than a Health Program, and our interest extends to the health of our patients as well as the diseases of our patients.

Whereas, the advice of those most responsible for the delivery of this health service (the Physicians and the Health Department) is not being requested or considered.

Therefore, be it first resolved, That the follow-

ing points be offered for consideration as the best solution to this problem:

(a) That, the State Board of Health be designated and authorized to function in and be responsible for all medical aspects of this program.

(b) That, the Drug Formulary, if used at all, be altered in such a way as to prevent the discrimination as to drug firms and to give the physician more latitude as to choice of drugs based on the need of his patient and his experience with the drug.

(c) That, the Advisory Group to the responsible agency have more medically trained persons on it and that the advice of this group be utilized as planning for the program progresses.

Be it further resolved, that the Academy make these facts known to our Governor and to the presiding officer of the Senate and House of Representatives and to all Academy Members, and members of the General Assembly and to request that Legislation to effect these imperative improvements in the South Carolina Medical Assistance Program be speedily enacted.

THE MONTH IN WASHINGTON

A House Ways and Means Committee member introduced on the first day of the new Congress a bill that would provide federal income tax credits to help individuals buy private health insurance.

The legislation (HR 19), sponsored by Rep. Richard Fulton (D., Tenn.), was similar in principle to a health insurance financing plan utilizing tax credits approved by the American Medical Association House of Delegates at San Francisco last June and reaffirmed at Miami Beach last December.

Fulton said he considered his bill "at least an opener" for hearings.

"Certainly before expanding any federal program, I believe it worthwhile to explore the use of the private sector and our tax system," Fulton said.

The Fulton bill provides that individuals with incomes of \$2,500 or less and families with incomes of \$5,000 or less would receive \$150 vouchers from the federal government per eligible individual for the purchase of health insurance. The family maximum would be \$400.

In the case of a taxpayer with an income between \$2,500.01 and \$5,000, or a family with an income between \$5,000.01 and \$7,500, the credit would be a 75 percent per eligible individual with a maximum of \$400 per family.

In the case of a taxpayer with an income of \$5,000.01 to \$7,500, or a family with an income between \$7,500.01 and \$10,000, the credit would be 50 percent per eligible individual with a \$400 family maximum.

In the case of a taxpayer with an income exceeding \$7,500.01, or a family with an income exceeding \$10,000.01, the credit would be 25 percent.

At San Francisco, the House of Delegates adopted as approved AMA policy "the principle of graduated income tax credits for premiums paid for adequate health insurance." A resolution adopted at Miami Beach called upon the AMA to "vigorously promote the enactment of federal legislation implementing" the plan.

* * *

A special commission on health facilities concluded that government and private enterprise must cooperate to organize the nation's health resources into effective, efficient and economical community systems of comprehensive health care for all persons.

The National Advisory Commission on Health Facilities, established in October, 1967, drafted its report to the President in general terms and did not make any recommendations for legislation.

James Z. Appel, M.D., a former president of the American Medical Association and a commission member, said the family physician would be the ideal "point of entry" to a community health system but there are not enough of them.

A summary of the report included:

"America's health care systems should combine private and public responsibility. Facilities and systems will vary from community to community in accordance with local capacities and local needs, but guiding principles should govern the effort to develop effective and efficient health care systems:

"1. These systems should be organized to assure appropriate points of entry into and continuity of health care services.

"2. Every citizen should have ready access to quality health care.

"3. States, regions, local communities, and all health institutions should carry out continuous planning.

"4. Both those who provide and consume health services should participate in the decisions.

"5. All levels of health care should be interdependent."

* * *

A Health, Education and Welfare Department report to Congress recommended that preventive health care services not be added to medicare benefits at this time.

The report cited as reasons for the negative recommendation: administrative constraints, inability to estimate costs, limited experience with automated multi-phasic health screening, and an inadequate supply of health professionals.

The report was one of three requested by Congress last year and submitted before the change in Administration.

A second report dealt with coverage of mentally ill under medicare but did not include any recommendations.

The third reviewed qualifications of personnel under current medicare regulations. It stated that, because of an acute manpower shortage in the field, physical therapists should be considered qualified if they could establish an adequate level of competency. HEW is developing a proficiency examination.

HEW recommended against allowing licensed practical nurses to serve as nurses responsible for the total nursing care at an extended care facility. It also recommended against changes in the regulations that set minimal standards for independent laboratory personnel.

Cancer Information Wanted

The Medical Genetics Section of the Department of Preventive Medicine and Public Health at Creighton University School of Medicine is interested in the study of patients showing an increased incidence of any histological variety of cancer in their families. Of particular interest to us is the cancer family syndrome, characterized by: 1) increased frequency of adenocarcinoma of all sites, particularly of the colon and endometrium, 2) early age at onset of cancer, 3) increased occurrences of multiple primary malignant neoplasms, and 4) autosomal dominant inheritance. To date, we have investigated six families fulfilling all of the above criteria (Lynch, H. T., and Krush, A. J.: *Heredity and Adenocarcinoma of the Colon*, *Gastroenterology* 53:517-527,

The premium rate for medicare supplementary insurance covering physicians' fees (plan B) will remain at the present rate, \$4 each for the individual beneficiary and the federal government, until July 1, 1970.

The Johnson Administration's Secretary of Health, Education and Welfare, Wilbur J. Cohen, decided against an increase although the Social Security Administration's chief actuary had advised that an anticipated rise in physicians' fees called for an increase of 40 cents each for the beneficiary and the government.

Cohen again asked physicians to show "unusual restraint" in setting fees. He urged that physicians and patients cooperate "in eliminating unnecessary utilization of physicians services," and asked carriers and intermediaries to carefully review claims during the next 18 months.

* * *

The Food and Drug Administration proposed that six widely prescribed antibiotic drug combinations be taken off the market on grounds that they fail to live up to their claims of effectiveness.

The drugs and their manufacturers' Albamycin G. U., Albamycin-T capsules and granules, and Panalba capsules, granules and drops—Upjohn Co.; Achromycin nasal suspension—Lederle Laboratories; Mysteclin F capsules, syrup and pediatric drops and Mysteclin F-125 capsules—E. R. Squibb & Sons Inc.

The drug companies were given 30 days to respond before FDA's final action. The FDA order could be appealed to the courts.

Two of the drug companies promptly protested the FDA proposal in public comments. An Upjohn spokesman said his company's combinations are superior to the major constituents alone. A Squibb spokesman said Mysteclin F had wide acceptance among physicians and a proper place in medical practice. A Lederle spokesman said Achromycin was not a major sales product, and declined to comment on what the company's official response would be.

1967), and have corresponded with physicians in Europe who have described two separate and non-related families which also fulfill the above criteria.

Physicians with patients known to have a familial cancer background, are requested to write to Henry T. Lynch, M.D., Associate Professor and Chairman, Department of Preventive Medicine and Public Health, Creighton University School of Medicine, 657 North 27th Street, Omaha, Nebraska 68131.

We invite your cooperation in our studies which will include a genealogical and medical investigation of the entire kindred in each case. All information obtained will be shared with family physicians in order to facilitate cancer control.



Two Greenville pediatricians have been elected to fellowship in the American Academy of Pediatrics. They are **Dr. Watt McCain Jr.** and **Dr. John P. Matthews**. **Dr. Snead Ameen** of the Great Falls Clinic will return to the Medical College of South Carolina for the study of radiology. **Dr. William F. Young** of Sumter has been selected by the American Academy of Pediatrics to evaluate the medical aspects of the local Head Start program in Sumter. Five doctors from the Marine Corps Air Station in Beaufort have been practicing in Walterboro on a part time basis. They are **Dr. Edward F. Good**, **Dr. Richard Dellerson**, **Dr. Salvatore Casella**, **Dr. Richard Beudingen** and **Dr. Bill Peloquin**. A medical library in the new Redfern Health Center at Clemson University has been named in memory of the late **Dr. John Charles Barnett**, Clemson alumnus and staff physician who died of Bright's disease last July. Dr. Barnett was associate director of the Clemson student health service. **Dr. Danny Blackwell** has

succeeded **Dr. W. L. McDow** as president of the Kershaw Chamber of Commerce.

Dr. James W. Forrester has been elected president of the Georgetown County Medical Assn. to succeed **Dr. C. Lide Williams**. **Dr. R. O. Jones** was elected vice president; **Dr. S. Ronald Campbell**, secretary-treasurer. **Dr. James B. Galloway** of Columbia has been appointed to administer a program for continuing medical education in psychiatry and neurology at the William S. Hall Psychiatric Institute. The program is designed to make available to physicians most recent advances in the knowledge and skills in management of emotional and physical disorders of the nervous system. Recently elected officers of the Charleston County Medical Society include **Dr. Louie B. Jenkins**, president; **Dr. H. B. Othersen**, secretary-treasurer; **Dr. Franklin Graves**, Nominations, Policy and Public Relations Committee; **Dr. Clay W. Evatt Jr.**, delegate SCMA and **Dr. J. S. Howell**, alternate delegate.

MEETINGS

The Department of Pediatrics, Emory University School of Medicine, will sponsor a postgraduate course "Hematology for the Pediatrician" March 17, 18, 19 in Grady Memorial Hospital Auditorium, Atlanta, Ga.

For more information write: **Dr. Richard W. Blumberg**, Emory University School of Medicine, 69 Butler St., S.E., Atlanta, Ga. 30303.

The American College of Physicians will present "Three Days of Gastroenterology" March 26-28 in Grady Memorial Hospital Auditorium in Atlanta.

For information write: **Edward C. Rosenow, Jr., M.D.**, American College of Physicians, 4200 Pine Street, Philadelphia, Pa. 19104.

Urological Post Graduate Seminar will be sponsored by the Department of Urology, Medical College of South Carolina on Friday, April 18. **Dr. Willet Whitmore**, chief of Urology at Medical Hospital for Cancer & Allied Diseases, New York, will be visiting professor.

For registration write: **Dr. Fletcher C. Derrick Jr.**, Assistant Professor, Dept. of Urology, 80 Barre St., Charleston, S. C. 29401.



Medical College of South Carolina

Dr. Melvin Knisely, Professor and Chairman of the Department of Anatomy, has been elected President-elect of the Southern Society of Anatomists. The election was held at a recent meeting of the group in Charlottesville, Va.

Dr. Elsie Taber, Professor of Anatomy, was elected a Council member of the Society for 1969-70.

Presenting papers at the meeting were: **Dr. T. C. Davies**, "Attempted Treatment of Acute Toxic Hepatitis with High Pressure Oxygen;" Robert W. Ogilvie, "The Vasomotor Innervation of the Cat's Lower Right Canine Tooth," and Dr. H. I. Bicher, "Effect of Adrenalin Infusion on Platelet Aggregation in the Cat As Determined Using the Screen Filtration Pressure Method."

The Southern Society of Anatomists will hold their meeting in Charleston in 1970, while Doctor Knisely is President.

Dr. Richard H. Gadsden, Associate Professor and Interim Chairman of the Department of Chemistry, has been elected a Fellow of the American Association for the Advancement of Science. He is the second person on the Medical College faculty to receive this award in the past three months. Dr. Melvin Knisely, Chairman of the Department of Anatomy was so honored in November.

Dr. Loren F. Parmley, Jr. presented a talk entitled, "Use of Exercise in the Detection of Heart Disease," at the South Carolina Heart Association's Seminar in Columbia, S. C.

Dr. Parmley attended the scientific sessions of the American Heart Association's conference at Miami Beach, where he pre-

sented a paper on the "Early Detection of Angina Pectoris."

Dr. Lawrence L. Hester, Jr. and **Dr. E. J. Dennis, III** were examiners for the American Board of Obstetrics and Gynecology in Chicago, Ill.

Dr. Hiram Curry presented a paper, "Bedside Differential Diagnosis of Stroke," to the S. C. Chapter of the American Academy of General Practice, Charleston, S. C.

Drs. E. F. Woods, J. K. Pruett, and **W. H. Newman** recently attended the American Heart Association Scientific Sessions in Miami. Dr. Woods presented a paper entitled, "Ventricular Depolarization Rates During Inotropic Responses to Catecholamines." Dr. Newman participated in the postgraduate seminar as a member of the Council on Basic Sciences.

Drs. John Moncrief, Max Rittenbury, and **Michael Weidner** participated in the Oral Examinations of the American Board of Surgery in Augusta, Ga.

Dr. Peter Hairston spoke at the Association for Academic Surgery in St. Louis Missouri on "Depression of Immunologic Surveillance by Pump Oxygenator Perfusion."

Dr. Norman Goodman presented a paper entitled, "Fungi from patients with chronic respiratory disease" at the Fall meeting of the SCB:ASM.

Dr. Abner Levkoff attended the meeting in New Orleans, Southern Medical Association, Pediatric Section, recently and spoke on "The Outcome of Paroxysmal Tachycardia of the Newborn Discovered in Utero."

Dr. William H. Lee, Jr. recently spoke on "The Antithrombotic properties of dex-

tran: experimental and clinical" at the University of Miami Seminar on Thromboembolic Disease with **Drs. Harry Hint** and **Sven-Erik Bergentz** of Sweden and **Dr. Norman A. Matheson** of Aberdeen, Scotland.

Dr. Peter Hairston spoke at the National Academy of Science in Washington, D. C. on "Clinical observations on the use of hydroxyethyl starch" summarizing three years of clinical investigation by the Division of Thoracic Surgery on the clinical use of HES.

Dr. Jack E. Arrants attended the 15th Annual Meeting of Southern Thoracic Surgical Association in San Juan, Puerto Rico and presented the paper "Esophageal replacement with interposed jejunum" (Arrants, Dalton, Hairston, Lee). **Dr. John P.**

Sutton also attended this meeting and was a discussant.

Dr. Peter Hairston presented a paper entitled, "Massive corticosteroids: Effect on myocardial inotropism" (Hairston, Dalton, Lee) at the 41st Scientific Session of the American Heart Association in Bal Harbour, Fla.

Drs. Lee and Hairston attended the Biomaterials Seminar at Columbia University, New York where **Dr. Lee** presented a talk on the "Surface interface effects upon blood protein."

Dr. Bartley E. Antine, Assistant Professor of Ophthalmology, attended the annual meeting of the Southern Ophthalmic Pathology Society in Lima, Peru on January 8-11, and spoke on "Congenital Hereditary Corneal Dystrophy."

MUMPS VIRUS VACCINE

The Committee on Control of Infectious Diseases met in Chicago on October 20, 1968, and reexamined its recommendations concerning the use of live, attenuated mumps vaccine (*Academy Newsletter Supplement*, Dec. 15, 1967), in the light of an additional year's experience with this antigen.

It is estimated that a million or more doses of mumps vaccine have been administered since licensure. Continuing surveillance of antibody titers in individuals immunized three or more years ago has shown persistence of significant antibody levels. No serious untoward reaction has been reported.

The Committee reaffirms its recommendation that all males in preadolescent or older-age groups who have not experienced mumps be immunized with the live, attenuated vaccine.

Also, mumps vaccination might well be considered in closed population groups such as camps, special schools, and the like where an epidemic of mumps might interfere seriously with educational or other programs.

The additional evidence affirming the

efficacy and safety of mumps vaccine strengthens the basis for its use in children older than one year.

However, in view of the usually benign nature of mumps, the Committee recommends that its use in such children be considered only when programs of higher priority such as measles immunization, tuberculin testing, and the like, will clearly not be compromised from the standpoints of logistics, personnel, or finances.

MEETINGS

The 22nd National Conference on Rural Health will be held March 21-22 at the Philadelphia Marriott Motor Hotel in Philadelphia. The conference theme will be "Meeting Rural Health Needs in Our Changing Times."

For more information write: **Bond L. Bible, Ph.D.**, Council on Rural Health, AMA, 535 North Dearborn St., Chicago, Ill. 60610.

The William S. Hall Psychiatric Institute in Columbia, S. C. will sponsor "Problems in Neurology and Psychiatry for General Physicians" on March 21-22.

MEDICAL COLLEGE OF SOUTH CAROLINA
THIRD POSTGRADUATE SEMINAR ON
INTERNAL MEDICINE

Friday, February 28th 1969 and Saturday, March 1st 1969

The Seminar will be held in the auditorium of the Veterans Administration Hospital, 109 Bee Street, Charleston, South Carolina. Fee \$15.00

Registration: Friday, February 28th @ 12:30 P.M.

Registration: Saturday, March 1st, 1969 @ 8:30 A.M.

ABUNDANT PARKING IS AVAILABLE

Guest Speakers:

Dr. J. Caulie Gunnells
Division of Nephrology
Duke University Medical Center

Dr. Gene V. Ball
Section of Rheumatology
University of Alabama

Dr. Herzl Spiro
Department of Psychiatry
Johns Hopkins Hospital

VICTOR BORGE CONCERT—A block of seats (Orchestra Section) have been reserved for the Victor Borge Concert at the Municipal Auditorium 8:30 P.M. March 1, 1969 at \$5.00 per ticket.

THIRTEENTH GREENVILLE POSTGRADUATE SEMINAR

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TUESDAY, WEDNESDAY, AND THURSDAY
March 25, 26, 27, 1969

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GUEST SPEAKERS

- Dr. G. Thomas Jansen—Professor of Dermatology, University of Arkansas
Dr. Robert Greenblatt—Professor of Medicine, Chief of the Department of Endocrinology, University of Georgia Medical School
Dr. Robert S. Whalen—Associate Professor of Medicine, Duke University
Dr. Gordon McHardy—Professor of Medicine, Chief of the Department of Gastro-Enterology, Louisiana State University Medical School
Dr. John F. Buse—Associate Professor of Medicine, Chief of the Department of Endocrinology, Medical College of South Carolina
Dr. Claude Frazier—Author, Editor and Practicing Allergist, Asheville, North Carolina
Dr. Charles Reisey—Professor of Surgery, Chairman of the Department of Urology, Emory University
Dr. Peter Gazes—Professor of Medicine, Chief of the Division of Cardiology, Medical College of South Carolina
Dr. Claire Cox—Associate Professor of Surgery, Department of Urology, Bowman Gray School of Medicine
Dr. Louis Jervey—Chief of Infectious Disease Section of the Department of Medicine, Medical College of South Carolina

Tuesday, March 25, 1969

- 8:30 Welcome
9:00 Dr. John Buse—Clues to Hidden Parathyroid Disease
10:00 Dr. Louis Jervey—Newer Concepts in Antibiotic Therapy
11:00 Dr. Gordon McHardy—The Delima Hiatal Hernia, Incidence vs Significance
12:00 Dr. Robert Whalen—Coronary Insufficiency
12:40 Question and Answer Period
Dr. John Buse, Dr. Louis Jervey, Dr. Gordon McHardy, Dr. Robert Whalen
1:10 Luncheon—Dr. John Buse—Help for the Impotent Male
2:30 Dr. Charles Reisey—Management of the Diseases of the Female Urethra
3:30 Dr. Louis Jervey—Bacterial Endocarditis, The Problem—Its Management
4:10 Question and Answer Period
Dr. John Buse, Dr. Louis Jervey, Dr. Charles Reisey

Wednesday, March 26, 1969

- 9:00—Dr. Thomas Jansen—Emergency Dermatology
10:00 Dr. Robert Whalen—Beta-Adrenergic Blocking Agents
11:00 Dr. Robert Greenblatt—Pill Problems
12:00 Dr. John Buse—The Woes of the Middle-Aged Patient—Endocrine or Emotion?
12:40 Question and Answer Period
Dr. Thomas Jansen, Dr. Robert Whalen, Dr. Robert Greenblatt, Dr. John Buse
1:10 Luncheon—Dr. Peter Gazes—How to Interpret the ECG Interpretation
2:30 Dr. Gordon McHardy—Changing Concepts in Colonic Ulcerative Disease
3:30 Dr. Claire Cox—Antibacterial Therapy in Urology
4:10 Question and Answer Period
Dr. Peter Gazes, Dr. Gordon McHardy, Dr. Claire Cox
7:00 Greenville Country Club—Social Hour
Courtesy of Park McKinney and Russell Jones of B. F. Ascher & Company
8:00 Banquet

Thursday, March 27, 1969

- 9:00 Dr. Robert Greenblatt—Hairy Problems
10:00 Dr. Claude Frazier—The Management of Allergies in the Surgical Patient
11:00 Dr. Thomas Jansen—Skin Carcinomas—Newer Treatments
12:00 Dr. Gordon McHardy—When Does Diverticulitis Become A Surgical Disease?
12:40 Question and Answer Period
Dr. Robert Greenblatt, Dr. Claude Frazier, Dr. Thomas Jansen, Dr. Gordon McHardy
1:10 Luncheon—Dr. Robert Greenblatt—The Endocrinology of Sex
2:30 Dr. Peter Gazes—The Management of the Patient in the Coronary Care Unit
3:30 Dr. Claire Cox—Etiology of Urinary Infection
4:10 Question and Answer Period
Dr. Robert Greenblatt, Dr. Peter Gazes, Dr. Claire Cox

THE HEALTH INSURANCE PROGRAM FOR THE AGED

HEALTH INSURANCE PROGRAM STAFF
S. C. State Board of Health

Change is the theme of our times and social progress is the philosophy by which we live. A veritable explosion of knowledge in the medical, biological and physical sciences, and to some extent in the social sciences, is forcing drastic changes in the delivery of medical services at all levels. Society has made it quite clear that it is not afraid of change and new knowledge and expects them to be implemented in services.

Today a national program is being implemented to serve a segment of the population over 65 years of age who qualify. The magnitude of the problem is complicated by the variations in State laws and levels of medical services available throughout South Carolina.

The President signed the Social Security amendments of 1965, Public Law 89-97, on July 30, 1965. These amendments initiated a renewed emphasis to the health problems of the population over 65 years of age. This is known as the Health Insurance Program for the Aged.

The goal of any health program must be to promote a healthy population, to prevent illness and premature death, to correct or limit disability, to treat all illnesses and to provide maximum rehabilitation to all beneficiaries with impairments. The achievement of these goals involves the fullest possible application of medical knowledge and the use of all resources.

To put Medicare into effect, the State agency has approached the problem by trying to make health services readily available to all beneficiaries. Emphasis has been focused on medical care as a

part of a comprehensive plan for service, not just a payment of the medical bill.

In the State of South Carolina, the State Board of Health has been given the responsibility to perform certain functions of the certification and consultation program relating to professional care. The hospitals, nursing homes, and home health agency in South Carolina have nominated Blue Cross as their fiscal intermediary. The South Carolina Medical Association has approved Blue Shield as the carrier for medical insurance.

The State Board of Health has the responsibility in the Health Insurance Program for certification, consultation, and coordination. Certification—by the State Board of Health to the Department of Health, Education, and Welfare indicate whether hospitals, extended care facilities, home health agencies, and independent laboratories meet and continue to meet their respective Conditions of Participation. This function is a natural adjunct of activities of the State Board of Health such as licensing of health facilities and other standard-setting activities. Consultation—services are rendered to hospitals, extended care facilities, and home health agencies that need and request assistance to meet the Conditions of Participation as an integral part of the certification process. Coordination—by the State Board of Health relates its activities in the performance of its functions under the Health Insurance Program to the various other programs in the State that have to do with payment of health care, quality of care, and distribution of

health facilities. Coordination with these activities is designed to utilize existing State facilities and trained personnel effectively and economically and to prevent duplication of effort.

The hospitals became eligible on July 1, 1966, for payment of hospital costs for services to beneficiaries of the Health Insurance Program. There are 107 hospitals in South Carolina with 70 hospitals participating in Medicare. Of the 8,428 hospital beds in South Carolina, 6,766 are available for use by the 18% of the population over 65 years old. Since 80% of the hospital beds in South Carolina are available, patients over 65 years of age can be treated in a participating hospital when diseased or injured. Seven hospitals have been certified to admit emergency cases for treatment. All Federal hospitals located in South Carolina are also eligible to receive payment for emergency care for beneficiaries of the Health Insurance Program.

Health facilities such as nursing homes today are going through an evolution similar to the one hospitals passed through 40 years ago. In the early years of this century hospitals were commonly considered places to die. Now they are centers of hope and healing.

Health facilities are undergoing a similar change today, from a "roads end" refuge for hopeless patients to an integral part of the total health care picture. No longer are they the last stop.

The modern extended care facility, for example, is programmed to be the intermediate step between a hospital treatment and home. Today's extended care facility or geriatric center is truly a facility for health care with emphasis on the word "care". A positive program for getting the patient back on his feet should be charted for each patient. It should be pursued optimistically, and this is the job of the extended care facility supplemented by the Home Health Agency.

The extended care facility provides a vital community service by substituting

for the actual home if the person who has been sick or injured requires continuous medical and nursing care. This facility fills a specific need which is met by no other kind of institution. It also assists the community by releasing beds in a general hospital and in reducing the cost of care to the patient. Patients over 65 who have spent a minimum of three days in a hospital have had part of their extended care facility bills paid by S.S.A. under the Medicare program since January 1, 1967. Every effort must be made to provide as much service for the beneficiaries as possible. Medical treatment must be kept simple, realistic and flexible, but it must be detailed enough to make a real contribution to the progress of the patient.

South Carolina has 93 licensed nursing homes of which 51 have been classified as meeting the Conditions of Participation to serve medicare beneficiaries.

The term "Home Health Services" refers to health services furnished to a person who is under the care of a physician on a visiting basis in the person's place of residence, whether it be his own home, the home of a relative, an apartment, a home for the aged, or in some other type of domiciliary institution.

In South Carolina, Home Health Services were almost non-existent when Medicare was initiated except those services provided by the County Health Departments and two small Visiting Nurse Associations. The beginning of Medicare pointed up the great need of improvement and availability of this type of service.

As a result, the State Board of Health, through the County Health Departments has been able to upgrade this service in 36 of the 46 counties. Each of these counties, in addition to skilled nursing services, offers at least one other ancillary service. These ancillary services include occupational therapy, physical therapy, speech therapy, medical social service, or home health aide services.

Two other agencies in the State, the

Aiken Easter Seal Rehabilitation Center and the Greenville Visiting Nurse Association, have been certified to provide Home Health Services.

All beneficiaries of medicare over 65 years of age are eligible to receive Home Health Services when a plan for the use of these services is established by their personal physician. During a spell of illness, that is, following at least three days in the hospital, an individual may be eligible for 100 Home Health visits under Part A of the Health Insurance for the Aged Program.

An individual is also authorized 100

Home Health Service visits per year under Part B in addition to those under Part A. The beneficiary's personal physician is authorized under Medicare to visit the patient as frequently as medically indicated.

In summation, Home Health Services include the following benefits: (To the extent they are available in the individual counties).

Part-time nursing care.

Physical, occupational, or speech therapy.

Services of home health aides.

Medical social services.

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THE NATIONAL ALUMNI.

MEDICAL COLLEGE OF SOUTH CAROLINA

JACK C. NORRIS, M.D.

Atlanta, Georgia

This report is sent for inclusion in the Journal because we deem it to be of historic importance to the Medical College, and especially so to the alumni practicing in and out of the State. The matter deals with the establishment, functions, and extra-curricular activities of the above group.

The organizing members of this group met for the first time in Atlanta, Georgia, October 27, 1953, at the Academy of Medicine, and were attended by various college alumni. This was a dinner, and at the conclusion, it was suggested a National organization be formed. Dr. Jack C. Norris therefore drew up a resolution to that effect which was submitted and approved. Dr. Major Fowler was honored by being elected the first President. The "founding" alumni were so designated. Doctor R. P. Walton was the first speaker. President K. M. Lynch was unable to attend, but approved the establishment.

After a few meetings had been held, difficulty arose in electing a president for the group each year who would or could carry on. The writer was appointed as the permanent Secretary, eliminating the Presidency, to do the job of arranging meetings and receptions in various places, and to perform other ground work. Dr. Norris' appointment has continued under Dr. Lynch's successors.

Since the College is the oldest Southern Medical School, and its traditions are deep, it was felt that the alumni group would best be served and more active in a South-

ern atmosphere; therefore, the members have met yearly at the November sessions of the Southern Medical Association. There we have had a very fine, cordial cooperation. Indeed, during the past several years our group has led almost all of the other schools in the number of persons attending.

It should be emphasized that the reasons for the creation of a National Alumni were based upon the assumption that there was a need for alumni sessions to be held out of South Carolina which would afford an attractive opportunity and occasion for out-of-state practitioners, who rarely ever had attended the alumni meetings in the State, who could again meet old classmates, friends, and learn specifically of the tremendous growth now being pursued in Charleston, as the expansion program continues. Therefore, each year someone, usually the President or his designate, when appropriate, has brought the message along; however, most of the gatherings have been in the form of dinners or receptions, or both. Such activity has been stimulating and most heartening, and many commendable compliments received, especially from those who have been "out in the hills and faraway." In the first few years, the National Alumni was self-supporting, largely by selling tickets. This was hazardous, nerve racking, and a dubious undertaking. However, more recently, the College has lent financial aid, and so has the State Alumni under Dr. Richard Hanckel. This has made our bur-

den lighter and more pleasing to the taste. Those who now come are really our GUESTS.

It might be further added, that the National Alumni are non-political, and political shenanigans have not been permitted; never have the members stuck their noses into the affairs of the State Medical College Alumni Association. However, let it be known that our members are greatly interested in the college, its future growth and direction. It is in this spirit that we eventually hope to raise funds that would filter back in sufficient amounts to be useful in the college's growth. This is for the future.

We have had members who have already made substantial gifts to the college, and there are others whose names I do not have, who have contributed to the President's Fund. In addition, we have had friends who have been also very considerate and kind, in that they have underwritten several receptions; for instance one prominent drug company entertained us in New Orleans, Dr. Wm. B. Clark; as did Dr. Janie Topp, and Dr. and Mrs. Sam Norwood of Atlanta. Each was a memorable occasion.

A vast amount of ground has been covered in the past fifteen years. We have met in Atlanta, Miami, Dallas, Houston, New Orleans, Memphis, Louisville, St. Louis, New York, and Washington. In some cities, repeated meetings have occurred. In addition to our members, other distinguished persons have been invited to join with us, including Congressmen, a Senator, and the Presidents of the American Medical and Southern Medical Associations, etc. This plan has given us very pleasant connections with civic leaders, and those in high positions in American Medicine. That is important because the college has graduates in almost every state, the Army and Navy, and in foreign countries as well. No longer can we cuddle-up as a satisfied, closed South Carolina Coop. In medicine and medical teaching, we have to spread prestige into the world at large, whether we want to or not, or we shall

and refinement of our receptions. Several have acted as hostesses; namely, Mrs. dry up on the vine. Furthermore, there is nothing else in the alumni activity that gives a graduate more pleasure and happiness than for him to realize his alma mater is going forward successfully competing with the very best medical institutions in the nation. Knowing of this makes one very proud indeed of his diploma.

Those who have attended and were the organizational members of the National Alumni were: Gordon Able; J. F. Ball; M. W. Beach; John B. Black; Stacey Burnett; J. F. Busch; James Cain; J. D. Flynn; M. F. Fowler; George M. Grimball; C. L. Guyton; Wm. T. Hendrix; Howard L. Holley; Francis B. Johnson; William K. Kerr; W. Wyman King; Kemper Lake; C. W. Legerton; Claude Lindler; B. M. Montgomery; McKenzie Moore; Mordecai Nachman; Jack C. Norris; S. W. Norwood; E. G. Peek; Ellis Poliakoff; Sam Poliakoff; J. L. Sanders; Lesesne Smith; Calvin B. Stewart; L. P. Thackston; H. Pratt-Thomas; Eleanor Townsend; G. M. Truluck; R. P. Walton; and Arthur W. Williams.

May I humbly add that the fifteen years as the Secretary have been happy, pleasant ones, begging pardon for believing that in doing my job as best I could, I was hopefully performing something necessary for my alma mater, for South Carolina, and especially for out-of-state graduates by helping focus the eye of national prominence on a venerable college. If that be bragging, then dear Lord, drop me dead! But be certain I realize that little could have been accomplished had we not had the help, confidence, and support of so many, for instance, Doctor K. M. Lynch, who rarely missed a meeting, and whose leadership has always been stimulating and attractive. Also, to Drs. Tom Pitts and Dick Hanckel, Howard Stokes, and President McCord. To those men we say "Thanks a Million."

And finally, I think it pertinent to say something about the wives who have attended. They have added to the dignity



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Kenneth Lynch, Mrs. Jack Norris, and Mrs. McCord, Mrs. Hanckel, and others. Their presence and willingness to help us was greatly appreciated.

Our goal has been to be "the stature of the medical school measured in terms of acquaintance, position, and influence." If there be a more noble aspiration than that, I know not where it is, nor how to

find it. As far as I am aware, this the National Alumni group was one of the first of the type organizations in the U. S. Other schools have followed suit; however, this shall be the swan song, and we dissolve in order to turn over all alumni activities to Medical College Alumni Association, Medical College of South Carolina.

WE CAN DO MUCH BETTER

An Editorial by Dr. Irvine H. Page

Mr. Chairman and members of our medical societies! I shall avoid the usual introductory jokes because my speech is going to be very short. I will not flatter you as any good speaker should. Rather I will gently point out that medical meetings should return to being medical meetings. This is an odd statement you will readily admit, but I think you will agree with it. I fear that commercial exhibits, women's auxiliaries, door prizes, committee meetings, golf tournaments, breakfasts, delegate meetings, shopping, and shows and such like are downgrading the intellectual content of our professional meetings. Unless the subject is sex, most speakers draw token attendance. Too often the members only read in the newspapers what was presumably presented at the meeting. The scientific program is something to be endured rather than savored. Speakers seldom do their best in such an atmosphere of indifference.

There are, of course, many meetings in which this is not true, but these are usually the small ones and largely for specialists or academicians. This is more the pity because it is the bulk of physicians confronted with the multiple problems of medicine who need stimulation and education most: for example, those who attend chiefly the state society meetings where too often the intellectual content is adequate but, as someone said, boredom is as plain as the dozes on their faces.

Physicians do indeed need both a forum and a cocktail lounge to discuss their

political views. Their wives enjoy the activities of auxiliaries, and pharmaceutical manufacturers need a place to exhibit their wares. But in all the hubbub, the speaker's message is lost. He is becoming something to be tolerated, a holdover from a vanishing milieu. If the "medium is the message," the human form is becoming obsolete. While no one enjoys a highball more than I, let's not forget that 76% of the body is water and there are those among us who should try to keep it so!

Guest speakers often receive even shorter shrift. Let me remind you of a few of the trivia indicative of this trend. Speakers are assigned the hotel room remaining after the early-arriving convention members and especially the officers have been made comfortable. The hotel front desk knows who is booking the convention and paying the bills! No one takes charge of the guest speaker, simply because everyone is too busy with his own activities. He may not even be invited to the presidential cocktail party or dinner. In short, he is treated as a stranger, especially by the paramedical contingent who look on the speaker as the one who detracts from the exhibits or, in the case of the wives, the one who makes her husband feel guilty. This is unlike doctors' usual behavior, because ordinarily they are friendly, hospitable, considerate people. In fact, I know of no part of society that so genuinely represents this fine human trait. But these characteristics

are being lost at our big meetings due chiefly to the emphasis on extracurricular activities.

Speakers are now retaliating in kind. Recently I spoke at a state meeting where one of the featured speakers did not bother to come or to send a substitute. I talked to him later and he told me that he would have come "if it had been convenient." What an attitude; yet I know what he meant!

There are many minor things to find fault with, but the important thing is to restore the principal reason for a medical meeting. This can be done quite simply if we all give it a little thought. If we continue the practice of allowing the public to take over the exhibits, the hospitality committee to keep everyone up too late, and committees and golf to monopolize the time of the members, then let's not

try to save face by going through the motions of holding scientific sessions.

This is no exaggeration, because many meetings are getting perilously close to just this. I fully recognize the need of some to carry on the business of the society, though most of it should have been done before the convention. But the mechanics should be kept in proper perspective. We must restore the interest, the dignity, and the vitality of the intellectual content of our professional societies.

Gentlemen, I thank you for listening to a very nonprofessional and nonintellectual complaint. You did not pay my expenses for this but, as so often with me, you pays your money and takes your chances!

IRVINE H. PAGE, M.D.
Modern Medicine,
June 17, 1968

Medical Assistant Student available for summer work in doctor's office from mid-May 1969 to late August. Contact

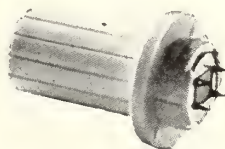
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Acetaminophen	150.0 mg.
Dextromethorphan HBr	7.5 mg.
Glyceryl guaiacolate	50.0 mg.
Alcohol	15 %
Chloroform	0.1 %

Indications: Symptomatic treatment of coughs and colds

Contraindications: None mentioned

Dosage: Children 3 to 6 years: 1 tsp. q.3-4h. 6 to 12 yrs.: 2 tsp. q.3-4h. Adults. 2-4 tsp. q.3-4h.

Supplied: Syrup—bottles of 4 fl. oz.

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Manufacturer: Rose Laboratories

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Indications: Nutritional supplement

Contraindications: None mentioned

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Supplied: Tablets, chewable; bottles of 60.

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Antibiotic—Penicillin. Rx

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Contraindications: Hypersensitivity to penicillin, infections due to penicillinase-producing bacteria

Dosage: Infants: up to 5 kg.—62.5 or 125 mg q6h. 5-7.5 kg—94 or 188 mg q6h. 7.6-10 kg—125 or 250 mg q6h.

Supplied: Pediatric Drops—100 mg/cc; bottles of 20 ml with dropper. (To be reconstituted)

AMCILL Suspension

Antibiotic—penicillin. Rx

Manufacturer: Parke, Davis & Co.

Nonproprietary Name: Ampicillin trihydrate

Indications: Infections due to susceptible strains of Gram-negative or Gram-positive bacteria.

Contraindications: Hypersensitivity to penicillin, infections due to penicillinase-producing bacteria.

Dosage: Adults: 250-500 mg q6h. Children: 50-100 mg/kg/day in divided doses 3-4 times daily.

Supplied: Oral Suspension—125 and 250 mg/5 ml bottles of 80 ml (To be reconstituted)

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Contraindications: Hypersensitivity to it.

Dosage: 400,000 U. q.i.d., taken on an empty stomach.

Supplied: Powder for Syrup—400,000 U./5 ml; bottles of 80 and 150 cc.

DEATHS



Dr. George M. Truluck

Dr. George Madison Truluck, 81, died December 17, 1968 in an Orangeburg Hospital.

Dr. Truluck was born in Olanta and was graduated from Clemson University in 1908 and the Medical College of South Carolina in 1911 and the Manhattan Ear, Eye, Nose and Throat Hospital.

He practiced in Marion and served two years in Germany as captain in the Army Medical Corps in World War I. After his return to this country and a number of courses in his chosen specialty, he came to Orangeburg in 1922 as a specialist in work with the eye, ear, nose and throat. He became president of the S. C. Ophthalmological and Otolaryngological Society.

He served as president of the Edisto Medical Society and for some years as

councillor from the 8th District to the South Carolina Medical Association, before being elevated to the presidency.

He associated himself with many civic and religious activities. He was a member of the Forty-and-Eight and chairman of the Orangeburg County Selective Service Board.

Dr. William Thomas Brockman

Dr. William Thomas Brockman, 87, of Greenville died December 16, 1968.

Born at Reidville in Spartanburg County, Dr. Brockman moved to Greer and later still to Greenville, where he established himself as the specialist in proctology. In his early days he had become interested in medicine and served as a semi-apprentice to a busy practitioner at Reidville. Later he spent some time at Furman University and after one year at the Atlanta Medical College he graduated at the Medical College of South Carolina, thereafter serving an internship at Roper Hospital. Settling in Greer he followed a general practice for 14 years before adopting his specialty. Becoming concerned with the need for proper proctological treatment among his patients he pursued a number of short courses in his chosen specialty, a procedure which he continued to follow for many years.

While in Greer he participated in local political activities and served as mayor for three years; he followed his civic interests in Greenville and was a member of City Council for several terms.

He became a fellow of the American Proctological Society, which honored him



W. T. Brockman, M.D.

in 1957. He was chairman of the Section on Proctology of the Southern Medical Assn. He served on the Council of the S. C. Medical Association for some years and enjoyed the unusual distinction of holding the presidential office of the Association for two years. Specializing in proctology in 1926 he became the first exponent of that discipline in the state. In 1932 he moved to Greenville. He held

the position of president of the Greenville County Medical Society and was very active in promoting its welfare, especially in beginning publication of the *Greenville Bulletin* and in building local programs which added much to the efficacy of the organization.

Dr. Brockman was a medical leader, a man of much magnetism, a kindly friendly person with a profound concern with religion and civic welfare. Many people sought his wise counsel on many subjects.

Dr. Alexander Peru Duff

Dr. Alexander P. Duff, 65, chief of staff at Stroud Memorial Hospital in Marietta, died Dec. 1, 1968.

Dr. Duff was born in Boat County, Ky. and attended Riverside Institute at Lost Creek, Ky., and received his M.D. degree from the Medical College of Georgia and did graduate work at the University of Alabama and Oglethorpe University School of Medicine.

He interned at Greenville General Hospital and practiced in Marietta since 1951. He had been chief of staff at Stroud Memorial Hospital since 1954.

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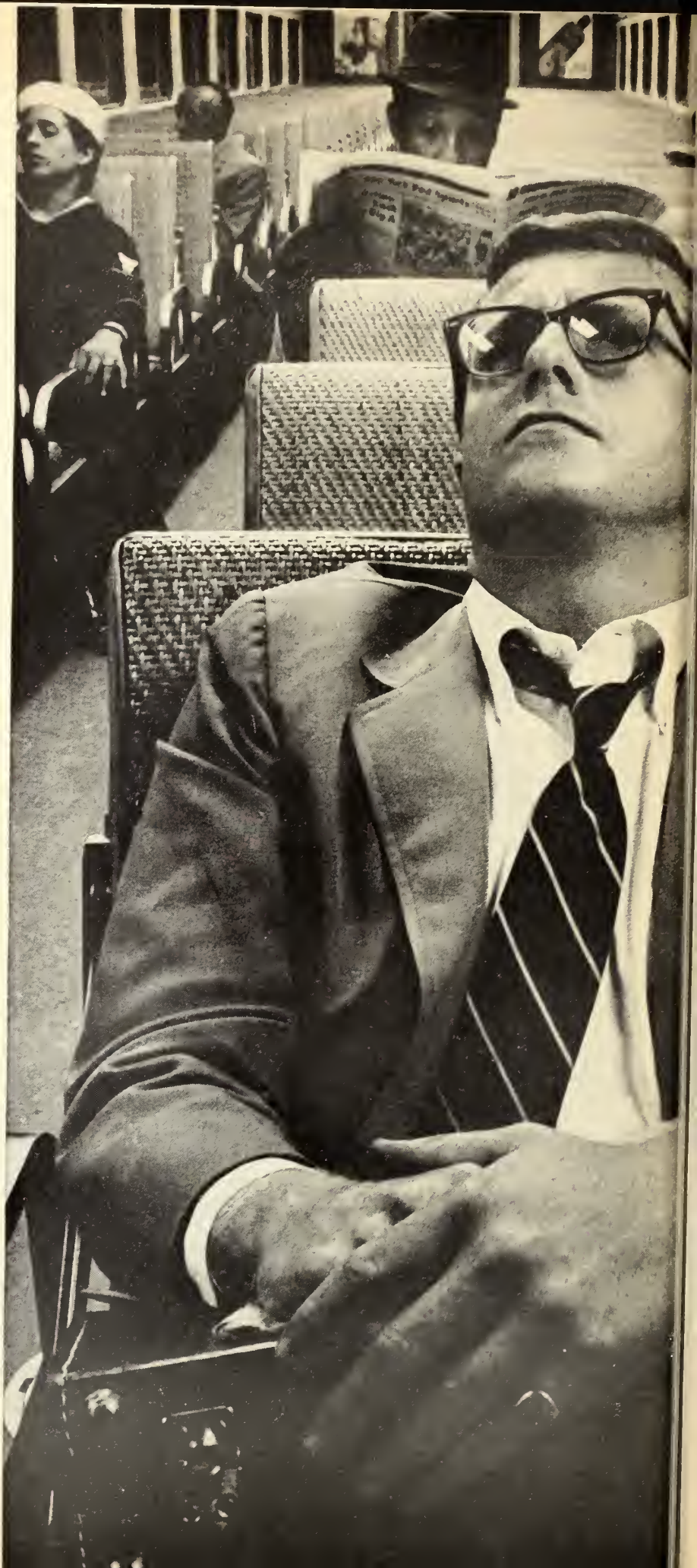
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VOLUME 65

MARCH, 1969

NUMBER 3

INTESTINAL PARASITES AND NUTRITIONAL STATUS

A PRELIMINARY REPORT

E. J. LEASE, Ph.D.
F. H. LAUTER, Ph.D.
B. W. DUDLEY, M.A.

I. Introduction:

During recent years much emphasis has been placed on the needs of the lower socio-economic classes. Testimony and local publications^{1,2} indicate that the nutritional and medical needs of the Negro in the southeastern part of the state of South Carolina have not been met. Jeffrey et al³ reported a very high incidence of helminth infections among the inhabitants of the rural coastal South Carolina area. Ledesma and Lease⁴⁻⁶ have investigated the existence of nutritional deficiencies among low income mothers throughout the state of South Carolina; however, these studies deal primarily with nutritional deficiencies among urban dwellers.

The subjects for the present study were 178 pre-school Negro children between the ages of two and eight who were residents of the Bluffton-Hilton Head Island area of South Carolina. The inhabitants of this rural region, in most cases, lived in dilapidated, unpainted, two-to-six room dwellings. Seldom were there adequate sani-

tary facilities; the absence of even outside privies was not uncommon. Water was a scarce commodity; some families of eight to fourteen members have only a few gallons of water per day to satisfy all their needs.

The purpose of this study was to determine the extent of intestinal parasite infection and the nutritional status of the children, also the nutritional and medical assistance required to elevate this population to minimal health and nutritional standards.

II. Methods:

One hundred seventy-eight pre-school children and their mothers or guardians were brought to the Public Health Centers at Hilton Head Island and Bluffton, South Carolina. An experienced interviewer used the 24-hour recall technique⁷ to obtain information on the dietary intakes. Since the subjects were so young, it was necessary to interview their mothers or guardians to obtain, as closely as possible, the daily food intake of each subject. The daily intake of specific nutrients was then computed by referring to the United States Department of Agriculture Home and Garden Bulletin No. 72, "Nutritive Value of Foods." The adequacy of the diets was determined by comparison with the recommended dietary allowances of the National Research Council.⁸

Where feasible, 10 ml of blood were collected

School of Pharmacy and Department of Biology
University of South Carolina, Columbia, South
Carolina

from each child by venous puncture. The blood was drawn into 15 ml syringes and part of it was immediately placed in 10 ml vacutainer tubes containing 10 mg EDTA in powdered form. The blood was packed in ice and transported to the University of South Carolina laboratory in styrofoam containers. A hemoglobin determination was performed on 0.02 ml of blood by the cyanomethemoglobin method of Hainline.⁹ Microhematocrit determinations¹⁰ were performed in order to determine the volume of packed red cells and to serve as a check on the hemoglobin determination. The vitamin C content of whole blood was assessed on a 2 ml sample using a modification of the procedure described by Bessey and associates.¹¹ Procedures employed for determinations in serum are those designated in the Interdepartmental Committee on Nutrition for National Defense Nutrition Surveys.¹²

Fecal samples were collected from each subject in plastic coated paper containers fitted with snap lids. Examinations for ova and parasites were performed on location and were verified upon being transported to a laboratory at the University of South Carolina. The direct smear technique was used to establish the presence of helminth ova. A modified zinc sulfate flotation method was employed to concentrate helminth ova from fecal material.¹³ Flotation was accomplished with zinc sulfate solution of specific gravity 1.180.

Soil samples were collected from the top 1 to 1½ inches of moist soil in the vicinity of the homes of the subjects investigated. This was done to locate one of the major sources of helminth transmission. The soil samples were transported to the laboratory in sealed containers where the sedimentation test of Headlee¹⁴ was utilized to concentrate helminth ova for examination under magnification of 100X and 400X using a binocular microscope.

III. Interpretation of Data

In an overall review of the analyses performed (Table I), it is evident that a significant number of subjects fall below the

Table I
Composition of Blood
Hemoglobin

Age of Children	Accepted Normal Value Grams per 100ml	Children Below Normal Per cent
1-3 Years	11.3	50.0
4-5 Years	12.6	61.9
6-8 Years	12.8	63.6

Vitamin C
Accepted Normal Value
mg per 100ml

Children	Accepted Normal Value mg per 100ml	Children Below Normal Per cent
1-8 Years	0.77	18.43

acceptable normal values of the constituents of the blood. It is notable that those blood constituents that do fall within the acceptable range are on the low side. One out of five children has a blood level of vitamin C that is below normal. Seventy-three per cent of these children were found to have the intestinal parasites, *Ascaris* or *Trichuris* or both (Table II). The interrelated association of ascariasis with trichuriasis often complicates an interpretation of the specific clinical role played by either of these parasites.¹⁵

Table II

Intestinal Parasites in Pre-School Negro Children
Bluffton-Hilton Head Island, S. C. Area

	Number of Children	Percent of Children
Infected with <i>Ascaris</i> only	28	21.4%
Infected with <i>Trichuris</i> only	33	25.2%
Infected with both <i>Ascaris</i> & <i>Trichuris</i>	35	26.7%
Not infected with <i>Ascaris</i> or <i>Trichuris</i>	35	26.7%
Total Number of Stools Examined	131	100.0%
Total Number of Children Infested with Parasites	96	73.3%

Averages from 151 dietary recalls (Chart I) show that the daily nutritional intake of the children is below the Recommended Daily Allowance for individuals of their age with the exception of protein intake. If one considers that below 66.6% of the RDA is a minimum diet, then these children are undernourished in over one-half of their needs, with only protein, vitamin A, riboflavin, and thiamine falling between 66.6 and 100 per cent and all other nutrients calculated (i.e., calories, calcium, iron, niacin, and vitamin C) being below 60%.

It should also be noted that these children are situated in a rural area, and many of the foods that were consumed during the study were seasonal (tomatoes, watermelons, fresh fish, etc.). There exists a real question in the minds of the investigators if they would continue to

INTESTINAL PARASITES AND NUTRITIONAL STATUS

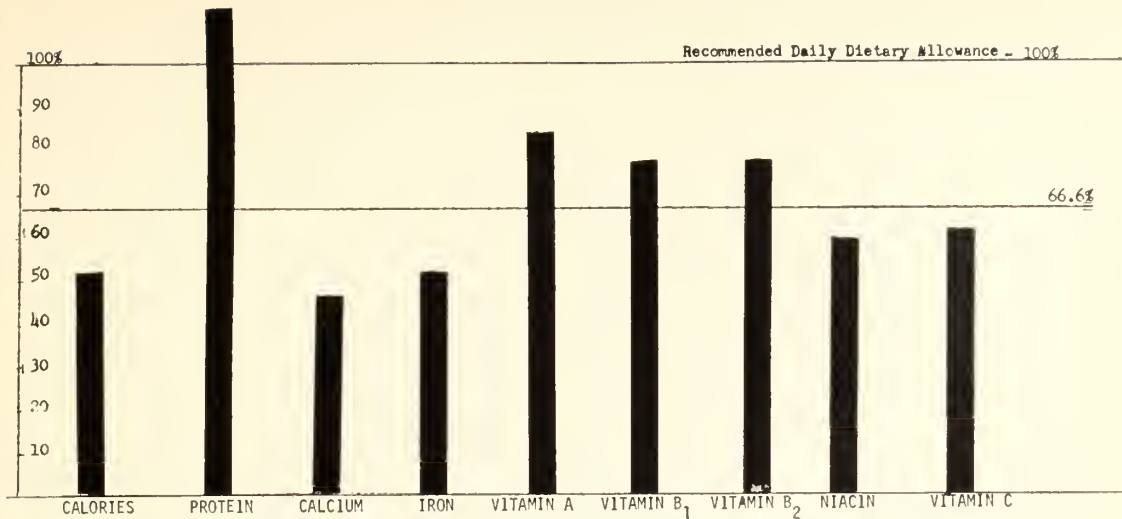


Chart I—Relative Nutrients in Diets 151 Pre-school Negro Children Hilton Head Island-Bluffton Area of S. C. Summer 1968

have even this minimal nutritional intake throughout the winter months.

An adequate number of soil analyses for a comprehensive study were not examined for parasite eggs; however, of the dooryard samples examined, infestation was observed in all samples.

Summary

It is quite evident from the data presented that a high degree of parasite infestation is prevalent in the area surveyed. The indications were overwhelming that this is a critical and crucial health hazard affecting the dignity as well as the well-being of all the citizens in this area.

The nutritional status was in most cases inadequate and in all instances minimal. The general knowledge in basic nutritional needs for growth and development as well as proper purchasing and preparation of foods left a great deal to be desired.

This lack of education, coupled with the inadequate sanitation and poor personal hygiene not only hinders any progress toward helminth elimination, but indeed contributes toward further infestation and continued "undernutrition."

Thus it is apparent that education, together with sanitation and chemothera-

peutic treatment, is the key to open the door of health to these victims of environment, habit, and heredity.

Addendum

During the latter part of December 1968 a nutritional status survey was conducted in this same area (Hilton Head Island-Bluffton) on pre-school white children. Of the 56 children studied, 4.2% were found to be infested with ascaris or trichuris. An overall average of the dietary intake calculates to be less than the Recommended Dietary Allowance in all nutrients except protein and vitamin B₂. Actual deficiency is noted only in the calcium intake which is 61% RDA.

On an individual basis, the percentage of children having nutrient deficiency is: 12%—calories, 1%—protein, 20%—calcium, 23%—vitamin A, 5%—vitamin B₁, 2%—vitamin B₂, 9%—niacin, and 18%—vitamin C.

Acknowledgement

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tion made it possible to get the children to the clinic and improve the conditions causing reinfection.

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Indications for Splenectomy in Hematologic Disease—

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(Charleston) Amer Surg 34:579-584 (Aug) 1968

Indications for splenectomy in hematologic diseases and specifically in 35 patients seen at the Medical College Hospital from 1956-1968 were reviewed. A good result can be expected routinely in hereditary spherocytosis. In idiopathic thrombocytopenic purpura failure to respond to steroid therapy, relapse, or contra-indications to or unacceptable side effects from steroid therapy are the usual indications for splenectomy. The majority of these patients will be benefited. Similar indications for splenectomy exist in autoimmune hemolytic anemia, but in other hemolytic anemias, except hereditary spherocytosis or ovalocytosis, splenectomy when the patient is symptomatic and the prognosis of the primary disease is sufficiently long to justify operation. Aplastic anemia and myelofibrosis with myeloid metaplasia rarely may be benefited by splenectomy. Surgical management in patients with coagulation defects is facilitated by the availability of fresh whole blood or plasma. Close cooperation between hematologist and surgeon is essential for the successful management of these patients.

COMPUTER SCIENCE AS APPLIED TO MODERN RADIATION THERAPY

KEENE M. WALLACE, M.D.*

JIMMY O. FENN**

Throughout the development of medicine the basic sciences have played an important role in assisting the physician, and have contributed greatly to progress in the field of medicine. Biochemistry has played the most important role in the past, while the physical sciences and mathematics have been delegated secondary positions. However, with the advent and increased usage of radiation therapy, these two sciences have become more involved in the medical field and now exert a profound influence on progress. This new era in medicine, resulting from the fusion of physics and mathematics, has been given the name physico-mathematics by Dr. Michael Terpogossian of St. Louis.

Most therapists are in agreement on the fact that precise radiation dosimetry is a necessary requisite to practice good therapy. Unfortunately, good dosimetry, while theoretically simple, is very time consuming. In many institutions there is either a deficit in the number of personnel qualified to perform this service or they are missing entirely. This deficiency can be alleviated to a large extent by the use of computers.

The history of computer radiation dosimetry is about seven years old. It has come into widespread use in the past several years and consequently there are a num-

ber of excellent programs present in the larger medical centers. However, the exorbitant cost of the necessary equipment and the highly trained personnel have resulted in the development and establishment of terminal centers to provide services to smaller institutions unable to afford this expense.

Our own dosimetry program is six months old and operates as a terminal associated with the M.D. Anderson Hospital and Texas Common Computer Center in Houston. With the aid of a grant from the Spartanburg County Cancer Society we were able to purchase the necessary equipment enabling us to hookup with the Houston center. As a result we are able to obtain precise calculations rapidly that are an invaluable tool to radiation therapy. Not only do we serve our own institution but we will be able to render this service to other institutions in the area which do not have this equipment. It is our ultimate goal to develop our own facility consisting of 360 computers and the necessary qualified personnel at the Medical College of South Carolina. The development of our own common computer facility is a necessity to the development and establishment of a state-wide oncological center at the Medical College of South Carolina. The funds for this program have been recently appropriated to this institution and the program is therefore in the development stage.

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Historical Review of Radium Therapy Dosimetry

The main objective of radiation therapy is to deliver tumoricidal doses to the tumor-bearing area without inflicting damage on the healthy surrounding cells. The interstitial or intercavitary use of radioactive nuclides is a highly efficient method of definitive radiation therapy since it permits delivery of high doses of radiation to the application area while sparing, to a great extent, the surrounding tissue. Therefore, it becomes necessary to obtain good dosimetry for both the application and surrounding area if these objectives are to be accomplished.

The advent of the utilization of radionuclides in the field of radiation therapy necessitated the development of a working definition of the radiation delivered by the nuclide. From the early 1900's to the 1930's, the period in which radioactive nuclides such as radium were initially used, a treatment was defined by the amount of isotope present and the time over which the application occurred. The dosage was expressed as millicurie hours. However, this term did not provide a relationship to the quantity of radiation delivered, the roentgen. Therefore, in the early 1930's two independent systems arose almost simultaneously which rectified the situation. These two systems defined treatment in terms of the number of millicurie hours used in relation to the quantity of radiation delivered by the radium. Quimby^{2,3} in the U. S. sought to find the doses from systems which were in common use at that time. Parker and Patterson^{4,5} in Great Britain chose to create an improved radium system. Although both groups sought the same goal, the expression of treatment in terms of quantity of delivered radiation, their philosophies of radium usage differed markedly. Because of this difference, it is not possible to translate from one system to the other.

Before the Patterson-Parker tables many radium systems involved spreading the radium uniformly throughout the lesion. Quimby, by considering each radium source as consisting of a number of point sources, was able to construct tables relating the size of treatment area and the number of milligram hours used to an exposure in roentgens for uniformly distributed applications. Therefore an "average dose" to the lesion could be calculated. However, this so called "average dose" has a significant variation over the lesion, sometimes as much as 100%.

The approach used by Patterson and Parker was to improve radium therapy by developing a new system of applications that delivered a uniform dose to the treatment area. They calculated their dose distributions from the isodose plots developed by Sievert.⁶ This approach maintained that the prescribed dose would be delivered at any point in the implant area with a total variance of only $\pm 10\%$.

Before an application is made the therapist can use either one of these systems and calculate the dose that a lesion will receive in rads. Theoretically, this planned therapy will usually coincide with the rules of application, and in the case of the Patterson and Parker system, will deliver a uniform dose distribution. However, the actual placement of the radium sources seldom follows the planned therapy. This difference arises when the area of treatment is not freely accessible and therefore does not allow accurate placing of the sources in accordance with the planned prescription. When this occurs a new dose distribution is now necessary as a result of the deviations from the planned therapy. The implanted area is first delineated by roentgenogram after which the new treatment area is calculated by one of the two methods.

Unless the application varies greatly from the planned therapy, the therapist may assume that the application still follows the rules by which he planned the

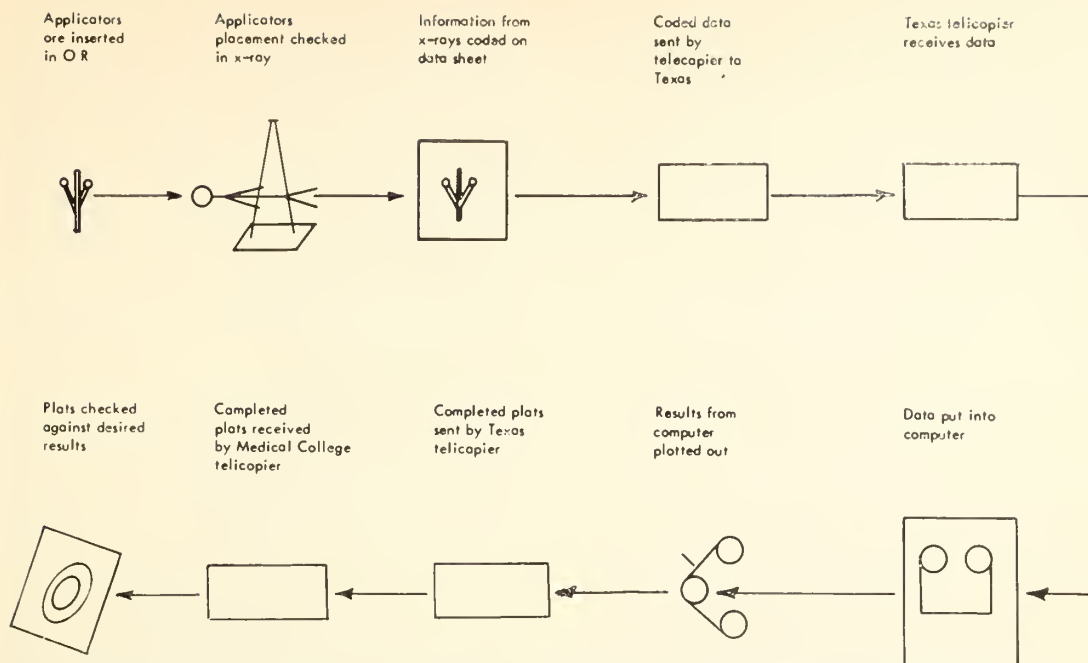


Fig. 1. Flow diagram showing how the dosimetry information is obtained at the Medical College Hospital.

treatment. He may then arrive at an estimate of the dose which the lesion will receive with some uncertainty as to the actual dose delivered. The therapist or physicist can rectify this uncertainty by manually calculating the dose delivered at a multiplicity of points from each source. However, this type of calculation is very time consuming and presents a situation in which a modern digital computer can be used advantageously.

The modern digital computer is capable of adding rapidly and renders an invaluable service to radiation therapy. It is possible to code into the computer the following information: the location of sources in the lesion, the type of sources used, the shape and size of the sources and their intensity. The computer then calculates the dose from each point from an extremely large number of points. It adds all these points to produce a total dose delivered to the area of interest. It is then possible to have the computer describe certain dose levels at various points. One then has the dose distributions in the volume of interest.

In the latter part of the 1950's and the early 1960's,⁷⁻⁸ as computers came into common use, several groups began to use them to calculate the doses from radioactive sources. Using radium as an example, the first step in developing such a program was to obtain a listing of the exposures at a large number of points in space surrounding the sources. This took into account the self absorption of the sources, the absorption of the sealing material, the decrease in intensity due to distance, and the absorption of the surrounding media. The information was coded into a computer and the doses at various points was calculated.

At the present time there are several programs available for obtaining the dose delivered with implantable isotopes. The program being used at the Medical College is one developed by the M. D. Anderson Hospital group. This program is the RADCOMP II program.⁹ This program is designed so that information for localization of the isotopes may be obtained from either orthogonal or stereoscopic films. From this information the dose

rates in one or several planes may be obtained.

Program at the Medical College of South Carolina

The program which is used at the Medical College of South Carolina is run at the Common Computer Research Center, at the University of Texas in Houston. A flow diagram showing the generation of patient information and the re-

sulting feedback of the dosimetry is shown in Fig. 1.

The radium or the unloaded application is first placed in position and the patient is then radiographed. The information obtained from the radiographs showing the position of the sources, the strength of the sources, and the desired dose levels is coded on an 80 column coding sheet. This sheet is then placed into the telecopier and the information is transmitted through the telecopier via the telephone to the M. D. Anderson Hospital. There the information is programmed into the computer and the results relayed to the Medical College Hospital via the telecopier.

In Fig. 2 is seen a comparison of the dose rate around two gynecological applications using only tandems. This type of

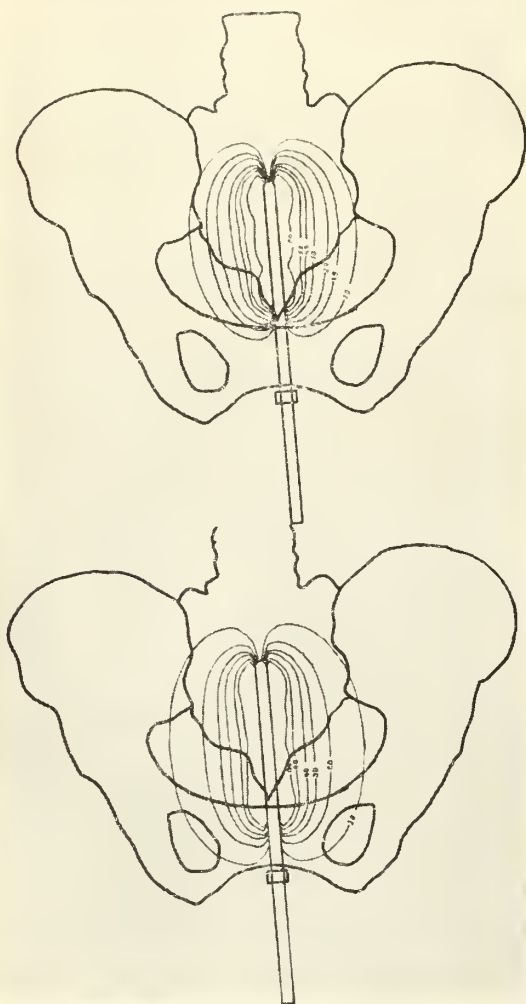


Fig. 2A. This view illustrates the dose rate in rads around tandem only application containing 3 sources. The isodose curves are in the plane of the radium. The tandem was loaded with a 15-10-10 mg configuration.

Fig. 2B. The addition of an extra 10 mg source is shown here. Not only is the distribution extended along the tandem but also better coverage to the parametrial area is produced.

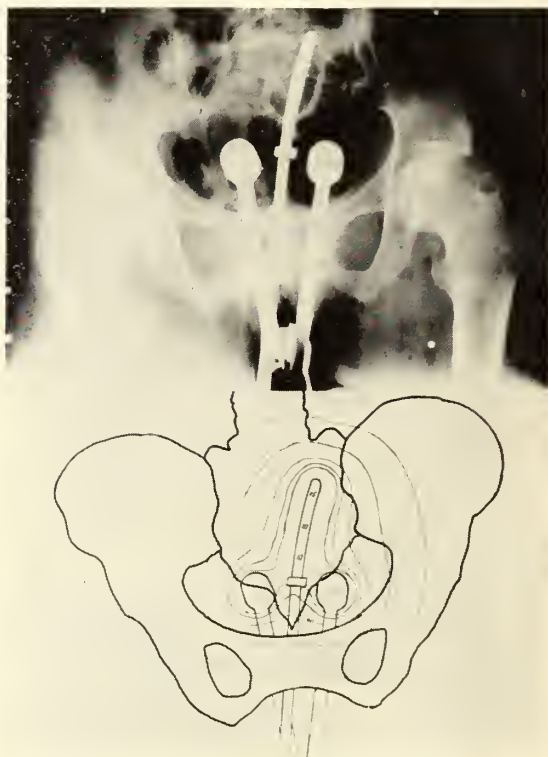


Fig. 3A. An A-P radiograph showing the position of a tandem and ovoids in position.

Fig. 3B. The isodose curves seen here show the area irradiated by a normal loading of the tandem and ovoids. This is compared with the tandem only application. The dose rates are in the plane of the radium and are rads per hour.

application would be used when it would be impossible to place in the ovoids. Fig. 2A illustrates the isodose distribution with three sources while Fig. 2B illustrates the same application with four sources. In Fig. 3 an application is shown utilizing both tandem and ovoids.

Permanent implants using radon seeds and other radioactive isotopes are frequently used for radiation therapy. The computer can be used to describe the dose

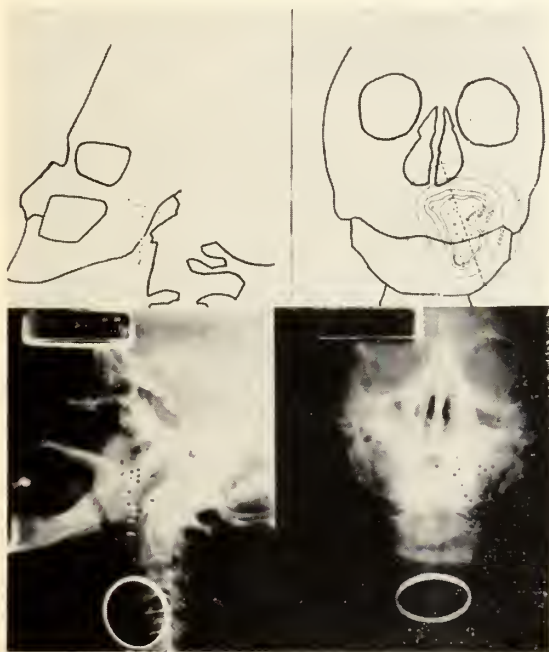


Fig. 4A. These A-P and lateral radiographs show the distribution of radon seed permanently implanted in tonsil lesion.

Fig. 4B. This figure shows the radiation distribution in a plane through the implant. The lateral view shows the plane selected. The A-P view gives the dose distribution in terms of rads. The activity of the seeds at implant time was 0.5 millicuries each.

delivered by these types of sources. Fig. 4 illustrates one of these types of application. Fig. 4A shows the AP and lateral radiographs of a radon implant and in 4B is the same projections with the dose distribution from the sources shown. The plotted outputs show that the patient received an adequate dose to the lesion.

While the computer is an invaluable aid in performing the calculations required for definitive radiation therapy, great care must be exhibited in using the

results obtained from the computer. Errors programmed into the computer via the coding sheets will result in errors in the results obtained. One type of error is illustrated in Fig. 5. This figure (5A) shows the location of the radium needles as they actually exist while Fig. 5B shows the position of the needles as they were programmed to the computer. These errors must be realized and the necessary changes made by the therapist or physicist. If comparison of hand calculations performed by either the therapist or physicist shows a significant difference with the calculations obtained from the com-



Fig. 5A. An A-P radiograph showing interstitial radium source.

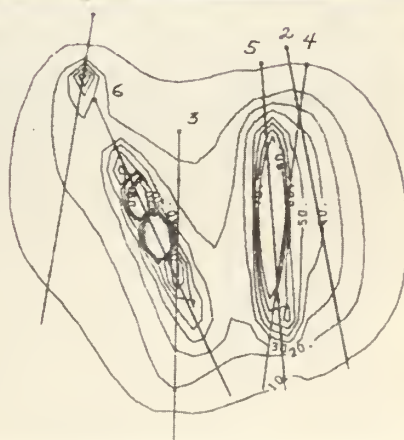


Fig. 5B. The returned computer plot showing the dose rate distribution along with the needle location. Note the difference in projected needle position as opposed to their actual position in the radiograph. This difference was due to errors in coding the position of the sources in to the computer.

puter, both sets must be carefully reviewed.

At the present time a program for implantable radioactive sources is in use at the Medical College of South Carolina Hospital. There are some external computer programs in existence and the M. D. Anderson group is actively engaged in the development of such a program. Upon its availability, along with the necessary equipment the Medical College of South Carolina will utilize both the external therapy program as well as the RADCOMP II program.

The Medical College of South Carolina is presently procuring a large IBM 360 computer. When it becomes operational the programs which are available at the M. D. Anderson Hospital can be run on this computer. This computer will also enable the Radiation Therapy Department at the Medical College to offer this

service to other treatment centers throughout the State.

Summary

Since the 1930's, the dosimetry of implantable radioactive sources has been achieved by manual calculation. In the last few years however, modern digital computers have been utilized and computer programs have been developed to perform the detailed dosimetry of implantable sources. The Medical College of South Carolina is presently using such a program through telecopier hook-up with the University of Texas, M. D. Anderson Hospital. This program, entitled RADCOMP II, yields a complete dosimetry record for an implantable source. At the present time, an external therapy program is not available at the Medical College Hospital but one is in the development stages which can be utilized and will be available in the near future.

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EMERGENCY TREATMENT OF ACUTE PULMONARY EDEMA

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Acute pulmonary edema is a common, dramatic and often catastrophic event in the life history of the cardiac patient. It is primarily an expression of disease of the left side of the heart and is therefore seen in patients with acute myocardial infarction, mitral valve disease, especially mitral stenosis, aortic stenosis, aortic regurgitation, severe hypertension, and occasionally in individuals with rapid tachycardias or pulmonary embolism. Rarer types of pulmonary edema include high altitude pulmonary edema, pulmonary edema following drowning or exposure to noxious gases, and that associated with acute renal insufficiency with overhydration. On rare occasions pulmonary edema has been associated with neurological disease including trauma and intracerebral hemorrhage.

In the previously untreated patient the cornerstones of treatment of acute pulmonary edema are:

- 1) sedation, usually with morphine
- 2) improvement of myocardial function by digitalization
- 3) onset of rapid diuresis with the newer diuretic agents
- 4) decreasing venous return and right ventricular output
- 5) removal of precipitating and aggravating factors such as tachy-arrhythmias, paroxysmal hypertension, arterial hypoxemia, metabolic or respiratory acidosis, and increased work of breathing

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- 6) proper positioning of the patient.

The above therapeutic measures are most often used concurrently rather than consecutively, especially if the pulmonary edema is severe. Formerly discussion often centered about the concept whether morphine or digitalis was the most important form of therapy in acute pulmonary edema. The development of the newer diuretic agents such as ethacrynic acid and furosemide has added another primary form of treatment for this condition. Generally, all three agents are administered early in the course of therapy for severe pulmonary edema, in addition to placing the patient in the upright position unless shock is present.

Morphine is best injected intravenously over a 2 to 3 minute interval in a dose of 8 to 10 mg. If necessary an additional 5 to 10 mg may be given one-half hour later. In mild cases the drug may be given subcutaneously or intramuscularly. Morphine therapy alone will often terminate the mild case of pulmonary edema. If respiratory depression results from morphine administration, nalorphine hydrochloride (Nalline) should be given intravenously in 5 mg doses which may be repeated once or twice at 20 to 30 minute intervals. Morphine should be avoided in patients with a history of allergic asthma or chronic pulmonary disease, especially if the arterial carbon dioxide tension ($p\text{CO}_2$) exceeds 45-48 mm Hg. Pulmonary edema in patients with cerebrovascular trauma or accidents should also be treated without morphine. Morphine therapy may result in varying degrees of hypotension which may in turn require therapy.

Improvement of myocardial contractility by digitalis is a second foundation of therapy. Intravenous therapy is generally advisable. If the situation is extremely grave and if the physician is experienced in the use of ouabain, 0.5 mg of this glycoside is given by vein and followed by further doses of 0.1 mg every half hour to a maximum of 0.8 to 1.0 mg or until clinical improvement is noted. One must be certain that the patient has *not* been receiving digitalis therapy for at least two and preferably three weeks if intravenous digitalis preparations are employed. Much more frequently lanatoside C or digoxin are utilized for rapid intravenous digitalization of patients in pulmonary edema. The time of onset of action of these latter two agents is less than one hour when given intravenously. If digoxin is utilized, 1.0 mg is given intravenously, followed by one or two 0.25 mg doses if needed. Maintenance therapy with oral or intramuscular digoxin may then be employed.

The development of rapidly acting diuretic agents—ethacrynic acid and furosemide—has altered the therapy of acute pulmonary edema. The use of 1 to 2 ml of a mercurial diuretic intravenously was formerly advocated, but since the onset of a diuresis was delayed for 4-6 hours, the issue was usually decided before an effective diuresis ensued. However, administration of either ethacrynic acid or furosemide results in much more rapid diuresis. Both agents when given intravenously produce the onset of diuresis within 15 to 20 minutes. A liter of urine will often be produced within 60 to 90 minutes. Oral administration produces onset of diuresis within 60 to 90 minutes. Ethacrynic acid is given in doses of 50 to 100 mg intravenously in pulmonary edema. Oral therapy (100 mg) is less desirable for therapy of pulmonary edema. Furosemide has not as yet been released for intravenous administration but is available for oral use. Theophylline derivatives such as aminophylline (0.24 to

0.48 G in 20 ml of solution and given slowly intravenously) are advocated by some clinicians, but this observer has seen little evidence of a beneficial effect unless severe bronchospasm complicates the picture of pulmonary edema. Similarly, agents which reduce tension, such as ethyl alcohol, have not been of significant benefit in our hands.

Measures to decrease venous return are employed, especially when the above approaches are not effective or only partially effective. The primary measures in this category include rotating tourniquets and phlebotomy. Phlebotomy is accomplished by removal of 500 ml of blood as rapidly as possible. Positive pressure breathing may also be employed to decrease venous return. Blood pressure must be watched carefully during positive-pressure breathing to prevent serious hypotension. Other measures to decrease venous return, such as spinal anesthesia and stellate ganglion blockade, have been suggested to decrease venous return, but have seen limited use. Ganglionic blocking and sympatholytic agents such as mecamylamine (1-3 mg diluted in 50 ml of 5% dextrose in water and given slowly intravenously), hexamethonium, dibenamine, and dihydroergokryptine have been employed but experience has been limited. The one situation in which these agents may be useful is in the treatment of pulmonary edema in patients with severe systemic hypertension.

The last category of therapeutic measures embodies the removal of precipitating factors. These include the correction of arrhythmias with rapid or slow ventricular rates. Arterial blood gas analysis has become an essential aspect of therapy in patients in pulmonary edema who do not readily respond to treatment. The most common acid-base abnormality detected is respiratory alkalosis which does not require specific therapy. Decreased peripheral perfusion due to low cardiac output is often a cause of metabolic

acidosis, which requires correction with intravenous sodium bicarbonate. Occasionally, endotracheal intubation or tracheostomy are required for adequate carbon dioxide exchange. Correction of arterial hypoxemia is accomplished by inhalation of high oxygen mixtures and correction of the pulmonary edema. The role of hyperbaric chambers in correction of arterial oxygen unsaturation remains for future study. Surgical correction of aortic and mitral valve disease may be needed to prevent recurrent pulmonary edema. The final precipitating factors of pulmonary edema that may readily be dealt with in-

volve restriction of activity and prevention of excessive sodium intake.

Utilization of one of the varied types of assisted circulation such as veno-arterial shunting, left heart bypass or counterpulsation offers future promise for the therapy of patients with non-responsive pulmonary edema, but the clinical value and role of these methods have not yet been determined. On the other hand, peritoneal dialysis with hypertonic dextrose solution offers a more immediately available palliative procedure for a few selected patients with non-responsive continual pulmonary edema.

SUICIDE IN SOUTH CAROLINA, 1955-1966

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EDWIN B. BLANTON, B.S.*

J. CHRISTOPHER CASTON, B.S.

It is reported that last year some 25,000 Americans took their own lives. This is more than twice the number of homicides. Knowledgeable authorities estimate that the actual suicide rate is likely twice that which is reported on death certificates. This number is grossly underreported for a variety of reasons. The social stigma attached to suicide in our society results in a reluctance to admit suicidal intent by family and friends. As of 1964 suicide was illegal in nine states, including South Carolina.¹ Even though these laws are seldom enforced, there remain strong religious laws against suicide. In addition, clauses in life insurance policies tend to mediate against accurate reporting. Perhaps the largest reason for underreporting is the difficulty in ascertaining the intent of the victim at the time of death. As a result, suicide reports vary widely from place to place and in specific locations with changes of coroners, medical examiners, or police officials. Litman, in a study of suicide in Los Angeles, found that 25% of all police reports were of no value in determining the attitude of victims prior to death.² It is likely, for example, that a great many automobile deaths are not completely unintentional. The apparent cause of death on the highway may mask the real cause—the victim's wish to die. Even so currently reported suicide ranks about tenth as a cause of death in the United States

and third among teenagers and college students, accidents and cancer coming first.

One study of suicides and suicide attempts reveals that there are approximately eight times as many unsuccessful attempts as successful suicides.³ Since the characteristics of those persons attempting and those succeeding are significantly different, it should be kept in mind that we are actually dealing with two different phenomena.

Many cases of suicide are preventable. Psychiatrists today say that even the most ardent death wish is usually ambivalent. Suicide notes often illustrate the fatal illogic of the suicidal person, the mixed cross-purpose desires: "Dear Mary, I hate you. Love, John." The National Institute of Mental Health reports that 65% of all persons who kill themselves visit their physicians within three months of the event. The average physician encounters half a dozen suicidal patients each year and will have ten to twelve suicides in his practice during his career.⁴ Concern for suicide is real and urgent for every physician.

Over the past ten years there has been growing interest in the study of suicide. A variety of methods have been used, one of which is the epidemiological survey. These kinds of studies are done with an eye toward understanding the characteristics of the suicidal population. The following list is a cursory examination of national suicide rates (suicides per

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100,000 inhabitants per year) for a few selected countries:

1. Hungary—27
2. Austria—22
3. Sweden—19
4. Switzerland—17
5. Japan—16
6. U. S. A.—11
7. Italy—5
8. Ireland—3

The wide national variations indicate the possibilities for examining demographic factors in the study of suicide.

Our study was undertaken in an effort to understand the patterns of suicide in South Carolina. Information was obtained from the South Carolina State Board of Health for the 2,106 certified suicides during the period 1955-1966. The data for this twelve year period included:

1. Age
2. Sex
3. Race
4. Marital Status
5. Method of Suicide
6. County of Death

The following report breaks down these data and presents some comparative tables for study. In addition, tables are included for comparison with national figures.⁵ State and national rates have been "age adjusted," using the direct method.⁶ The term "rate" refers to number of suicides per 100,000 population per year. In South Carolina the category non-white consists of 99.7% Negro, the remainder being made up of American Indian, Japanese, Chinese, Filipino and other non-white groups. Population data were obtained from the Department of Commerce, 1960 census report.⁷

Age Adjusted Suicide Rates (1955-1966)

The following Table compares "age adjusted" suicide rates for South Carolina and the United States for the period 1955-1966.

In every category except white males the

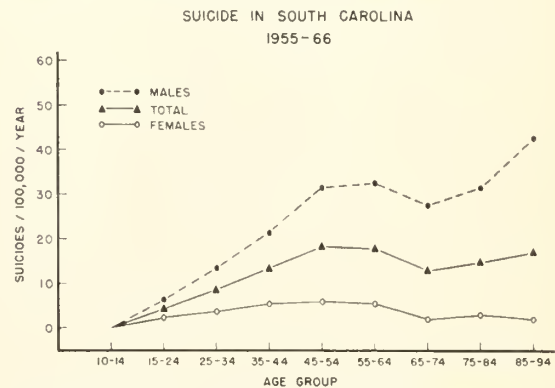
**Suicide in South Carolina
1955-1966**

	South Carolina	U.S.
Total	8.6*	10.5
White Male	18.3	17.3
White Female	4.0*	5.2
Non-white Male	6.0*	9.1
Non-white Female	1.0*	2.3
All Males	14.7*	16.6
All Females	3.2*	4.9
White—Both Sexes	10.9	11.0
Non-white—Both Sexes	3.3*	5.5

*Significantly low—95% Confidence Interval) Rate age adjusted.

state rates are lower than national rates. Statistical significance is based on the Poisson distribution. Those rates marked with an asterisk were significantly lower than national rates within a 95% confidence interval.*

The following graph depicts sex difference in the various age categories:



We see that there is a gradual increase for females in the age 35 to 65 age group followed by a decrease. The male rates show a gradual increase as age progresses with the highest rate in the above 85 age group. In all age groups the male rate is much greater than the female rate—at age 55 to 64 six times greater.

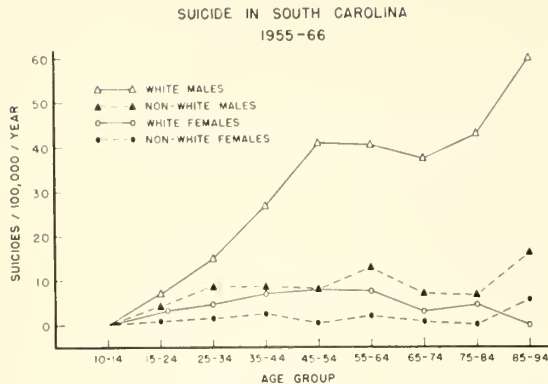
Race and Sex

The next figure breaks down the data for race and sex.

This further comparison indicates a much greater increase in suicide rates for the white male as he grows older. It

*Confidence coefficient = .95 means that there is a 95 per cent probability that the statement is true.

SUICIDE IN SOUTH CAROLINA



should be noted that at age 85 and above the suicide rate for the white male is 60 times greater than that for the non-white female, twelve times greater than that for the white female and four times greater than that for the non-white males, white females, non-white females. This would dispel the old idea that Negroes do not kill themselves. Negro males in South Carolina at all age groups pose a greater suicide risk than white females.

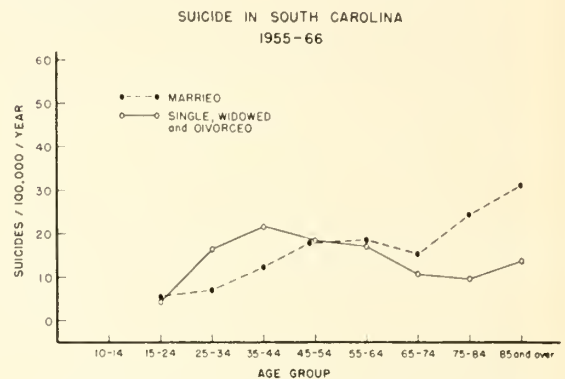
Marital Status

Suicide rates by marital status were calculated, and were age adjusted in the manner described above. The following table compares rates in various categories. (Note: The small number of reported suicides in separated persons did not permit age adjustment.)

Suicide in South Carolina 1955-1966 Comparison of Marital Status			
	Number	Rate	Age Adjusted Rate
Married Suicide Rate	1,513	12.3	8.7
Single Suicide Rate	309	6.3	10.5
Divorce Suicide Rate	89	39.8	29.2
Separated Suicide Rate	11	2.2	—
Widowed Suicide Rate	176	11.5	8.72

We see that divorced persons commit suicide 3.3 times more frequently than married persons. The national suicide rate for widowed persons was three times greater than the rate for widowed persons in South Carolina. We are unable to give a reasonable explanation for this variation.

The following graph represents suicide rates comparing married people and those persons without a spouse (single, widowed and divorced).



For the individuals without a spouse the greatest incidence occurs in age 35 to 44, whereas the rate gradually increases as the married person gets older.

Means of Injury

The use of firearms is the most frequent method of suicide in South Carolina. In 1964, 73% of the suicides in this State were accomplished in that manner as compared with 47.6% nationally. The following lists the categories utilized by Public Health officials in categorizing suicidal deaths and gives 1964 comparisons for South Carolina and the United States.

Category	Percentage in S. C.	Percentage in U. S.
I. Poisoning by analgesic and soporific substances	1.1%	12.3%
II. Poisoning by other liquid and solid substances	2.7%	3.3%
III. Poisoning by gases in domestic use	0%	0.4%
IV. Poisoning by other gases	7.5%	10.8%
V. Hanging and strangulation	10.2%	14.6%
VI. Submersion (drowning)	2.1%	2.6%
VII. Firearms and explosives	73.3%	47.6%
VIII. Cutting and piercing instruments	1.6%	1.9%
IX. Jumping from high places	0%	3.7%
X. Other and unspecified means	1.6%	2.7%
	100%	100%

SUICIDE IN SOUTH CAROLINA

Means of Injury—Type of Suicide	S.C. 1955-66	S.C. 1955	S.C. 1960	S.C. 1964	U.S. 1950	U.S. 1960	U.S. 1964
	Percentage Distribution						
	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Poisoning by analgesic & soporific substances	2.8	1.2	4.5	1.1	4.7	8.5	12.3
Poisoning by other liquid & solid substances	2.9	2.9	5.7	2.7	5.8	3.9	3.3
Poisoning by gases in domestic use	0.1	0.6	0.0	0.0	6.5	1.0	0.4
Poisoning by other gases	6.1	4.1	6.8	7.5	6.2	9.4	10.8
Hanging & strangulation	8.5	6.9	9.6	10.2	21.0	17.7	14.6
Submersion (drowning)	2.1	2.9	0.6	2.1	3.9	3.2	2.6
Firearms & explosives	74.0	75.0	70.0	73.3	43.0	47.4	47.6
Cutting & piercing instruments	1.9	2.3	1.1	1.6	3.1	2.6	1.9
Jumping from high places	0.9	2.3	1.7	0.0	3.7	3.7	3.7
Other & unspecified means	0.7	1.7	0.0	1.6	2.1	2.7	2.7

Over the twelve year period covered in this study it was noted that the use of firearms and explosives remained at approximately the same figure. Carbon monoxide poisoning and hanging and strangulation were methods that are increasing in South Carolina while jumping from high buildings is a method that is decreasing. Poisoning by ingested agents such as liquids, medicines, etc. increased markedly in 1960 but by 1964 had fallen to their former level. These methods tend to remain the same over the twelve year period. The above table compares U. S. and South Carolina percentages for the years 1955, 1960 and 1964.

The national frequency of hanging and strangulation is on the decline while the South Carolina rates are increasing. It should be noted that poisoning with medications is increasing in the United States but not in South Carolina.

Counties

County rates were not age adjusted. There was a high degree of variation among the counties ranging between Greenwood with a suicide rate of 14.8 and Jasper with a suicide rate of 3.7. The following table lists in descending order the counties and rates.

Statistical procedures for a 95% confidence interval were applied and the following counties were found to be significantly higher than the State average: Greenwood, Kershaw, Horry, Richland, Spartanburg, and Greenville. York and

Charleston counties could almost fit into this group. By the same methods three counties were found to be significantly lower than the state rates—Williamsburg, Darlington, and Dillon. At least one direct observation can be made from these data.

Suicide in South Carolina 1955-1968

County	Rate	County	Rate
1. Greenwood*	14.8	24. Marion	9.2
2. McCormick	14.4	25. Florence	8.7
3. Kershaw*	13.4	26. Dorchester	8.3
4. Horry*	12.9	27. Hampton	7.8
5. Abbeville	12.0	28. Colleton	7.6
6. Richland*	12.0	29. Saluda	7.5
7. Pickens	11.8	30. Sumter	7.4
8. Cherokee	11.6	31. Berkeley	7.4
9. York	11.3	32. Calhoun	7.4
10. Spartanburg*	11.2	33. Georgetown	7.4
11. Greenville*	11.0	34. Orangeburg	7.4
12. Allendale	10.8	35. Union	7.2
13. Chesterfield	10.4	36. Fairfield	6.6
14. Charleston	10.3	37. Barnwell	6.4
15. Chester	10.2	38. Beaufort	6.4
16. Marlboro	10.2	39. Clarendon	6.3
17. Aiken	10.1	40. Lee	5.9
18. Lancaster	10.1	41. Edgefield	5.8
19. Newberry	9.9	42. Williamsburg*	4.9
20. Laurens	9.8	43. Bamberg	4.8
21. Oconee	9.7	44. Darlington*	4.5
22. Anderson	9.6	45. Dillon*	4.2
23. Lexington	9.6	46. Jasper	3.7

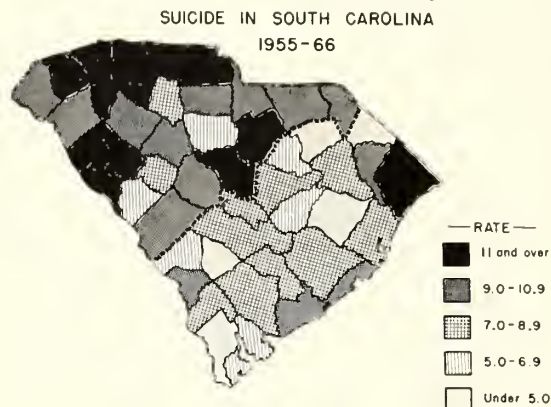
*Rate significant.

Those counties of 100,000 or more persons have suicide rates of at least 9.6. The leading two counties in the State, however, vary in eligible population from approximately 6,400 to 35,000 (Greenwood and McCormick). It is interesting to note that these two highest counties lie directly

adjacent to each other and adjacent to counties ranking twenty-ninth and forty-first (Saluda and Edgefield).

The following map gives suicide rates for each South Carolina county for the period 1955-1966.

With the exception of Horry all the



counties with a suicide rate of 11 or greater lie above the "fall line". Only four counties below the fall line have a suicide rate of 9 or greater: Horry, Marion, Charleston, and Allendale. Horry County represents an unusual population due to the high number of transient persons found in the various beach resorts. It would appear from these data that there is a correlation between suicide rate and degree of urbanization.

Summary

Epidemiologic data relative to suicide in South Carolina for the period 1955-1966 are presented. Comparisons are made relative to age, sex, race, marital status, method of injury and county in which death occurred.

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Observations Concerning the Extracorporeal Dialysis of Lymph in the Management of Chronic Renal Failure—H. E. Sarles, A. R. Remmers, Jr., T. S. Hargest, G. H. Smith and C. P. Artz. *New Eng J Med* 273:79-83 (July) 1965.

The search for an effective and economical substitute for extracorporeal hemodialysis led to the investigation of lymph dialysis. The thoracic duct was cannulated in a patient with terminal uremia. Daily lymph output which averaged 8.5 liters was dialyzed and ultrafiltered against a bath employing a modified Travenol Twin Coil using a closed system with a lymph reservoir. The dialyzed lymph was reinfused daily.

Lymph dialysis led to striking clinical improvement. Blood chemical changes included a decrease of blood urea nitrogen from 200 to 30 mg, of creatinine from 35 to 8.9 mg of serum phosphorus from 14 to 5 mg and uric acid from 12 to 4.5 mg per 100 ml. These preliminary observations suggest that lymph dialysis may be an economical method of performing long term extracorporeal dialysis.

NON-SPECIFIC JEJUNAL ULCER

REPORT OF A CASE AND REVIEW

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Non-specific ulceration of the small intestine,¹ especially in the jejunum, is infrequently recognized. The early symptoms are vague and the diagnosis is seldom made until a major complication, requiring surgical intervention, occurs.

An increased incidence and awareness of small bowel ulcerations have recently occurred coincident with the use of chlorothiazide and potassium preparations. At the present time, most medical opinion places the cause on enteric coated preparations of potassium chloride.² We wish to report a patient with a jejunal ulcer who presented a puzzling diagnostic problem and became extremely ill before definitive treatment was undertaken. An interesting feature of this case was a recurrence of ulceration with stenosis, which is reported to be quite unusual. An aroused interest in this entity will alert physicians to its possibility in puzzling cases and thus prevent the grave complications which in the past have resulted in high morbidity and mortality.

First Hospital Admission—A 51 year old white male mortician was admitted to the Marlboro County General Hospital on June 28, 1960 with recurring epigastric burning and gnawing discomfort of three week's duration. Appetite, bowel habits and stools had remained normal, and there was no history of excess alcohol or of drug ingestion.

Physical examination revealed a well-developed, moderately obese, middle-aged, white male in no distress. There were no outstanding abnormal physical findings. The weight was 216 pounds.

The stool gave a very faintly positive test with benzidine. Cholecystogram, upper gastro-intestinal

series and examination by barium enema were normal.

A convalescent ulcer diet and Oxaine (oxethazine) were prescribed, and the patient was discharged on June 29, 1960.

Second Hospital Admission—He was re-admitted about three months later on September 20, 1960. There had been a recurrence of epigastric burning and gnawing pain, lasting for hours at a time, and this had become associated with nausea and vomiting. There was no relationship of the discomfort to eating. He had lost almost 30 pounds during the last three months. During this time, the patient was under considerable emotional strain due to a traumatic home situation and thought this might be playing a role in his illness.

The patient looked well nourished despite the weight loss. He was rather tense and depressed. There was slight tenderness in the epigastrium, but no other abnormal findings, and there was no succussion splash.

The white blood count was slightly elevated, 15,600/cu mm. Hemoglobin 13 Gm/100 ml. Gastric analysis failed to demonstrate free hydrochloric acid, even after histamine administration. The sedimentation rate was slightly elevated, 19 mm/hr. (Wintrobe). There was slightly increased bromsulphthalein retention, 12.5%. Urinalysis, cephalin flocculation, cholesterol, serum amylase, blood sugar, total and fractional serum proteins were all normal.

A second upper G.I. series revealed the possibility of a small esophageal hiatus hernia; the stomach and duodenum were normal.

On the evening of the second hospital day, the patient vomited a large amount of undigested food. Following this, he stated that he felt much better. He was discharged on September 22, 1960 on a convalescent ulcer diet, with five small feedings daily. Elixir of Donnato, Maalox, and because of the depressive symptoms, Niamid (nialimide) 100 mg twice daily. He was to raise the head of his bed eight inches and not lie down after eating.

Third Hospital Admission—The patient was home only a few days when nausea and vomiting recurred, and became more severe and persistent, so that he could keep very little on his stomach. He was, therefore, re-admitted on September 26, 1960. He complained of a "roaring" sensation in the epigastrium. The vomitus was described as voluminous and containing bile. After vomiting, he felt better.

On physical examination, the blood pressure was lower than previously, being 90/60 mm Hg. The weight was 184 pounds, representing a 32 pound loss. He was somewhat lethargic, quite weak, with some slurring of his speech, and complaining of nausea. The skin and mucosa were moderately dry. The abdomen was flat, soft, with slight epigastric tenderness. No organs or masses were felt, and there was no succussion.

Laboratory Data: Leukocyte count 23,850; hemoglobin, 14.5 Gm, stool negative for occult blood; the BUN was slightly elevated, 25 mg/100 ml, serum transaminase, 55 Karmen units; cephalin cholesterol flocculation, 3 plus; BSP retention, 12% at 30 minutes; urinalysis, serum sodium and potassium, urinary 17-hydroxysteroid and 11-oxysteroid excretions were all normal. Chest roentgenogram and flat plate of the abdomen were normal.

The patient was given intravenous solutions of dextrose and electrolytes, the head of the bed was elevated, a strict Sippy regime was instituted, but nausea and vomiting persisted. The blood pressure remained rather low (90/60), the pulse rapid (120/min), and he continued quite weak and drowsy. Oliguria set in, and the BUN rose to 70 mg, though serum sodium, potassium and CO_2 remained normal. Massive replacement of fluid and electrolytes resulted in improvement in urinary output. A marked succussion splash was noted for the first time and gastric suction was started. At this time, an ill-defined mass was seen at times in the mid-abdominal region, suggesting a distended loop of small bowel.

A small bowel barium series was done. The stomach was normal, and there was mild dilatation of the duodenum, which emptied into a massively dilated loop of proximal jejunum due to a napkin-ring obstructive lesion. (Fig. 1). There was very slow seepage of the barium past the point of obstruction in the jejunum. Once past the obstruction, barium passed normally through the ileum and into the colon. Follow up films for 24 hours showed retention of barium in the proximal jejunum and stomach.

On October 17, 1960 exploratory laparotomy was carried out. At a point about 24 inches from the ligament of Treitz there was a circular obstructive lesion of the wall of the jejunum. The proximal small bowel was dilated and the walls thickened. There

were adhesions between the omentum, the colon, and the immediately distal small bowel and the obstructed area. A wedge resection of 22 inches of small bowel was carried out followed by end-to-end anastomosis.

Grossly, the lesion consisted of a 5 cm area of fibrotic constriction of the jejunum, with band-like distortion of the mucosa, and contraction and distortion of the serosa indicating ulceration with scarring and obstruction. Histologic examination revealed a large area of mucosal necrosis and ulceration, with an underlying base of actively inflamed granulation and scar tissue.

Following surgery, the patient improved remarkably; and within a few days, oral feedings were being tolerated well. He was discharged on October 24, 1960 feeling well, eating well, and at follow up examination in June 1961, he had regained his weight and strength and was having no gastrointestinal symptoms.

Fourth Hospital Admission—He was re-admitted to the hospital on November 16, 1963 complaining of upper abdominal fullness, nausea and occasional vomiting. Since his previous surgery, he had done well; and several follow-up small bowel series had been normal. Almost three months prior to admission, he began with symptoms reminiscent of his previous trouble, with gradually increasing abdominal fullness relieved by vomiting, and during this time had lost about 20 pounds.

No physical findings of note were present. There was no abdominal tenderness, hepatomegaly, splenomegaly or succussion splash.

Complete blood count, urinalysis, BUN, electrocardiogram were all normal. The stool was negative for occult blood twice. Small bowel roentgenogram revealed a narrowed area in the mid-jejunum, with loss of mucosal folds; there was no marked dilatation of the proximal small bowel. The findings were consistent with ulceration and obstruction.

The patient was hydrated adequately prior to surgery, and on November 25, 1963, laparotomy was performed. An area of granulomatous infiltration with marked narrowing of the intestinal lumen was found in the jejunum. The area involved was distal to that previously involved. Excision of the involved area of the jejunum and end-to-end anastomosis were carried out.

Pathologic examination of the removed specimen showed an annular stricture of the small intestine with some congestion of the mesentery. The intestinal lumen was reduced to .7 cm in diameter. The wall was thickened, distorted, firm and grossly fibrous. Microscopic examination revealed areas of gross congestion and complete replacement of the mucosal lining with granulation tissue; acute inflammatory cells and some exudate mixed with blood clot were present on the surface. Beneath

this area was quite vascular fibrous tissue heavily infiltrated with low-grade inflammatory cells extending through and in some areas replacing most of the muscularis. One section showed microscopic abscesses extending from the denuded surface to the muscularis. The inflammatory cells were chiefly lymphocytes with scattered plasma cells and eosinophiles. The vessels were dilated, congested, with some perivascular lymphocytic infiltration extending outward to the subserosal fat. Section of an adjacent lymph gland revealed normal architecture with an increased number of chronic inflammatory cells in the stroma and sinusoids. The pathologic diagnosis was chronic inflammation, non-specific, with ulceration of the jejunum.

The postoperative course was uneventful, and the patient was discharged on December 5, 1963.

The patient was bothered with mild steatorrhea for about three months following surgery, but since that time has remained in good health with no gastrointestinal symptoms.



Small bowel film showing mild dilatation of duodenum, massive dilatation of proximal jejunum, napkin ring obstruction.

Discussion

Non-specific ulceration of the small intestine is diagnosed infrequently. This is particularly true of jejunal ulcers. Gaum and Devereaux³ found 91 cases of jejunal

ulcer in a recent review of the literature and presented two cases of their own. Barrett,¹ reviewing 135 cases of small bowel ulcer, noted that 61 were in the jejunum.

Etiology: The cause is unknown. There are known diseases which cause ulceration in the small bowel such as tuberculosis, regional enteritis, typhoid, necrotizing enteritis, bacillary dysentery, Meckel's diverticulitis, gastric heterotopia, gastroenterostomy, Zollinger-Ellison syndrome, associated with non-beta cell islet tumors of the pancreas and KCl ingestion, but none of these has been associated with the entity we are reporting.

Primary inflammation, ischemia from emboli, vascular spasm, arteriosclerosis, endarteritis, injury from foreign body have all been mentioned, but none seems to apply. The fact that the ulcers are usually situated in the vicinity of the duodeno-jejunal flexure or the ileocecal valve has suggested that mechanical factors may play a role, since the intestine is relatively fixed at these locations.⁵ In the case reported here, however, both ulcers occurred in the mid-jejunum in a relatively unfixed area.

Age and sex incidence: Most cases occur in the age group 30 to 60 years, though they have been reported in patients from 8 to 85 years.⁶ Males are affected 3 times more frequently than females.

Location: Most small bowel ulcers occur in the upper jejunum or lower ileum and are usually single. In Barnett's review of 135 cases, there were 61 jejunal and 72 ileal ulcers; and in 2 cases, there were ulcers in both locations.⁴ Ninety-four ulcers were solitary and 22 multiple.

Pathology: The pathologic picture reported is uniformly non-specific.³⁻⁸ The ulcers vary in size from 0.3 to 5.0 cm. in diameter, and may be annular or linear. The edges are sharp and the base is of granulation tissue. Microscopically, there is a thin layer of fibrin and leukocytes

covering an area of fibrosis and granulation tissue with plasma cells and lymphocytes. In a few cases, vascular thrombi have been described, but there is no way of knowing whether these are primary or secondary.

The pathologic findings in the case reported herein are similar to those described previously.

Symptomatology: The duration of symptoms has varied from 1 day to 4 years. Many times the symptoms have been due to complications rather than the presence of the ulcer.⁵ Usually the disease begins insidiously with vague dyspeptic symptoms and abdominal discomfort.^{2,5,7,9} The pain is mild, intermittent, midabdominal and unrelated to food and medication, though alkali may give some relief. Borborygmi may be present, suggesting intermittent partial intestinal obstruction, as healing of the ulcer is quite often followed by scarring and stenosis. Vomiting, diarrhea, or rectal bleeding may occur. The patient may present himself with anemia due to occult bleeding.

Most often, complications bring the patient to seek medical attention. They are obstruction, perforation, and massive hemorrhage. In Barnett's review¹ of 130 cases there were 98 with perforation, 23 with obstruction and 1 with massive hemorrhage.

Physical findings may be absent. Most often there is some abdominal distension and occasionally an ill-defined mass. If major complication has occurred such as perforation or obstruction, the physical findings are compatible with these.

Diagnosis: Very early diagnosis may not be possible with present methodology, and has been most frequently made at the time of laparotomy, after a complication has set in. Even at laparotomy, the diagnosis may be missed if the ulcer is not sought for. An awareness of its presence, however, will decrease morbidity and mortality.

Roentgenograms are very helpful. A flat film may reveal gas-filled loops of small bowel, suggesting a localized lesion. If the ulcer is in the terminal ileum, it may be demonstrable on barium enema. Small bowel films with barium sulfate may reveal an ulcer niche, or, more frequently, an area of stenosis with dilatation of the proximal small intestine.

In a discussion of a paper presented by Morlock, et al,¹⁰ Bargen stated that he believed small bowel ulcers occurred much more frequently than they were recognized, pointing out that satisfactory roentgenographic examination of the small bowel is difficult even in the most skilled hands. Of 9 small bowel series done at the Mayo Clinic on patients with proved small bowel ulcer, the results were normal in 3 and in the other 6 indicated an obstructive lesion. Of these latter, the demonstration of a short stenosed segment of bowel led to an opinion that the obstruction was on an inflammatory basis.

In cases of gastrointestinal hemorrhage in which roentgenography fails to reveal a lesion and exploration of the stomach fails to reveal a bleeding site, careful search for a small bowel ulcer should be made.

Gaum and Devereaux³ state that ulceration of the small bowel should be considered: (1) In patients with recurrent post-prandial pain suggestive of peptic ulcer and with negative roentgenograms (as seen in the patient reported here); (2) In patients with gastrointestinal hemorrhage and negative roentgenograms; (3) In patients with gastrointestinal hemorrhage or partial intestinal obstruction in whom the barium meal demonstrates decreased mobility and dilation of the upper jejunum, (had more attention been paid to the jejunum earlier in our patient's course perhaps an earlier diagnosis could have been made); (4) In patients with peritonitis due to ruptured peptic ulcer in whom no gastric or duo-

denal perforation is discovered at laparotomy.

The presence of low values for HCl in a patient with ulcer symptomatology should alert the physician and would rule out the Zollinger-Ellison syndrome.

Treatment: The treatment of choice is resection of the ulcer and adjacent small bowel and end-to-end anastomosis.

Prognosis: The mortality rate among the cases reported is surprisingly high, being 11 per cent to 47 per cent,⁷⁻⁹ but this is due to the critical condition of the patients operated upon. Antibiotics and proper fluid and electrolyte management no doubt have improved more recent results. Those who survive have a good prognosis, however, as the ulcers have little tendency to recur. The patient herein reported is unusual in that there was a recurrence, and the two lesions were histologically and clinically similar.

Summary

A case of non-specific jejunal ulcer is presented. An unusual feature of this case is the recurrence of another lesion in the jejunum very similar to the original ulcer. Another interesting feature is that no potassium or chlorothiazide had been ingested, whereas most recent cases have been reported in association with the ingestion of enteric coated preparations of potassium chloride with or without the concomitant use of chlorothiazide derivatives.

Our patient came in with symptoms suggestive of peptic ulcer, but with negative findings on two upper gastrointestinal series and with failure to respond to the usual ulcer therapeutic regime. The presence of a small esophageal hiatus hernia further confused the picture.

Progressive weight loss, symptoms of partial small bowel obstruction, marked oligemia, dehydration and azotemia ensued. A succussion splash and an ill-de-

fined upper abdominal mass developed. A small bowel series was obtained and revealed a napkin-ring deformity of the jejunum which at laparotomy was found to be due to jejunal ulceration with scarring. Histologic study revealed a non-specific ulcerative and inflammatory lesion. Surgical relief of the obstruction resulted in dramatic recovery.

Had not definitive surgical treatment been carried out when it was, the patient's prognosis would have been extremely poor. Had the diagnosis been made earlier, considerable time, suffering and money would have been saved.

Two years later the patient had a recurrence of symptoms, and the increased awareness resulted in prompt diagnosis by small bowel x-ray series and curative resection and anastomosis. The second lesion, though located in a more distal portion of the ileum was histologically similar and quite non-specific. The patient has remained symptom-free now for over four years after removal of the second ulcer.

A review of recent articles is presented. It is of interest that no potassium or chlorothiazide preparations could be implicated, suggesting that their role in the etiology of small bowel ulceration may be over-emphasized at the present time. Our case was unusual also in the recurrence of ulceration which occurred and which is reported to be unusual.

It is hoped that an arousal of interest in this lesion will alert others to its possibility in puzzling cases, as the longer the diagnosis is delayed, the more likely are complications to occur with their resulting high mortality and morbidity. In addition, it is important that further investigation be made into the cause or causes of these lesions, as it is obvious that chlorothiazides and potassium preparations are not the only etiologic factors involved, nor perhaps the most frequent.

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Treatment of Melanoma by Lymphatic Perfusion and Regional Lymph Node Excision—J. S. Harvin, & J. R. Smith. (Charleston) *Amer Surg* 34:555-59 (August) 1968

The treatment of melanoma should include excision of the primary lesion and excision of the original lymph nodes draining the area. In some techniques, this is done as a two stage procedure, and in other techniques, as an en-bloc procedure with the excision of an intervening strip of skin.

The technique described is one in which the lymphatics are cannulated with a polyethylene catheter, and a mixture of Thio-Tepa and Sky-Blue is perfused into the lymph nodes. The Thio-Tepa has a specific effect against the melanoma and the Sky-Blue serves to color the lymphatic channels draining the area and the regional lymph nodes. The surgical procedure is the excision of the regional lymph nodes and the intervening lymphatics without resection of the skin. Fourteen cases are reported, with no evidence of local recurrence of satellite nodule formation following this type of surgery. The patients have been followed from 3 to 5 years.

X-RAY FILMS OF THE MONTH

S. E. PUCKETTE, M.D.

Medical College Hospital
Charleston, South Carolina



Fig. 1. Bilateral Retrograde Pyelogram

Figure one is a retrograde pyelogram and figure two a blown up view of the right renal area. They were taken from an examination performed on a middle age white female, who had recurring attacks of pyelonephritis for some years. In addition to the clubbing and the loss of renal cortex on the left, one will note multiple translucent filling defects in the upper ureters bilaterally as well as in the distal part of the right ureter.

This is an example of ureteritis cystica. This is an entity characterized by multiple inflammatory cysts projecting from the epithelial lining of the ureter. It is

secondary to urinary tract infection, almost always chronic; the cysts contain a watery or sometimes viscid fluid. The cysts may vary in size from one to several millimeters and thus may partially obstruct the ureteral lumen. While this case is bilateral, most cases are unilateral. Ureteritis cystica may be associated with similar inflammatory cysts in the renal pelvis (pyelitis cystica) or less often in the bladder (cystitis cystica).

The ureterograms or pyelograms define the cystic lesions as smooth, round or oval filling defects of varying size which may involve the ureteral mucosa only minimally or completely. In retrograde pyelograms, at times these may be confused with air bubbles, but by obtaining multiple projections with the patient in different positions, the distinction can usually be made.



Fig. 2. Right Renal Area (Blown Up)

President's Page



It can be said that we physicians have painted ourselves into a corner, or in other words, we have put ourselves into a compromised position which to some extent is our own doing.

The medical center of the world at this time is here in the United States. This has come about through a free society, excellent medical training, never-ending research, and a dedicated medical profession.

There has been a great public awakening as to how much the medical profession can do for people. We have now brought this country and its people to expect the very best of medical care for every one. While there is indeed some poverty in this country, at no time in the history of man has any one group of people, such as the citizens of the United States, known more affluence. This affluent state has created great expectations, and demands of all people for continued excellence in medicine.

Now, men of medicine are scientifically trained to think in terms of facts. Yet our patients, in most cases, approach treatment and their problems emotionally, rather than scientifically. So we have this problem of a mass of people reacting emotionally over their problems, (which do indeed seem to be increasing in size and intensity) while the solutions to the problems lie more in facts. The accelerating agents of this problem are the beaurocrats, with their manipulations of the news media in order to take advantage of the emotions with which the public regards the field of medicine.

For example, there are now projections for 1975 which state there should be twenty auxiliary medical personnel for each practicing physician. The physician need projected for that time is 600,000. This would mean twelve and a half million people, or one out of every seven employed in the United States. Such projections are not only unrealistic, they are dangerous. This is political action at its worst, without thought except to capture the vote.

Among us in the medical profession are many good men, capable of taking a definite stand against political and public hysteria. We need these men to stand for us against any political attempts to "take over" the medical profession. We need to place these men at our outposts in guard positions because this is war in a sense. We must fight to retain our freedom from eneroaching bureaucracy and single minded politicians. It is later than you think.

Now, in these perilous times for our profession what is it we can do? We must continue to function wholeheartedly as a group. We must marshall our leaders and activate them as soon as possible. Our movements must be thoroughly thought out and carefully made. We must endeavor to participate in all party and governmental endeavors which concern medicine in any way. This must be done individually and through our organizations, S. C. M. A., A. M. A., AMPAC, and SCALPEL.

Joel Wyman, M.D., President

Editorials

Osteopathy and the AMA

Those who wish to raise osteopathy to a plane on which scientific medicine stands have been greatly encouraged by recent action of the AMA in offering a slight gesture of friendship. There is little doubt but what this action will receive a great deal of misinterpretation and will be used as a powerful argument to persuade our legislators to allow unwarranted privileges to the graduate in osteopathy.

The medical profession in this area has always opposed increasing privileges for this group because it feels that the osteopath attends inferior schools, receives inferior instruction, and comes out with inferior knowledge of medical matters. The answer offered to the osteopaths plea for greater privilege and wider recognition is that he must improve his education if he is to claim the skill and ability of a regular physician. This means drastic improvements in their schools, the development of an internship program and an examining board of some sort to pass on qualifications.

While the AMA has indicated that it would welcome the orderly reception of the osteopath into the mainstream of medicine, it has qualified every statement with definite requirements that the educational apparatus of the osteopathic profession must be improved. This is in effect all that it has said in its last pronouncement.

While osteopaths have been given equal privilege with physicians in many states, the basic feeling in this state is that the osteopath must be properly educated if he is to be put on a competitive basis with the physician. What this implies is that the existing osteopathic schools should be so much improved that they compare with existing medical schools and that they give the quality of instruction which would render the osteopath competent to

carry out the duties of the physician. Since medical schools are not numerous enough and there seem to be many people seeking medical education, this would mean the addition of a number of schools which would give the equivalent of the medical doctor's education, a situation much to be desired in a country with an inadequate supply of competent physicians.

Cohen's Last Blast

It was to be expected that Wilbur Cohen would not enter his forced retirement without a Parthian shot of some moment. As he left office he warned doctors against any increase in their present fees and muttered some veiled prophecy about regulatory mechanisms to come.

Some physicians feel that the use of the method of assignment of claims has made us more vulnerable to governmental regulation and advocate that direct billing be carried out in every possible instance. This has been the cry for some time, but many doctors find it easier to make assignments and in this they are encouraged by the insurance carriers who find handling of direct billing somewhat difficult. Whether a general change to direct billing would make a great deal of difference is not certain, but it might be helpful.

Morbidity Trends

Comparison of morbidity figures may get to be rather tiresome, but in the past few decades so radical has been change in emphasis on certain diseases that it is rather exciting to see the accomplishments of modern medicine tabulated in black and white.

South Carolina's population is now rated at 2,382,594, and 20 years ago there were fewer people, but the differences in morbidity figures are very marked. In 1948, some 606 cases of diphtheria were reported as compared with six in 1968.

Measles came through with 2,902 cases as compared with 31 cases in the past year. Rubella showed no great change. Poliomyelitis yielded 381 cases in 1948 and one case in the year just gone. Septic sore throat showed 7,166 cases, scarlet fever 239 cases, as against 2,442 cases in the inclusive category of streptococcic sore throat in the past year. Typhoid fever still holds on with six cases but there were 69 in 1948. Hepatitis has become a fairly common disease with 154 cases in the last year whereas pellagra with 602 cases 20 years ago has disappeared from the list.

New medical knowledge and scientific application have been responsible for these great improvements.

Banning the Bomb

We understand fireworks were first used to scare off certain undesirable members of the spirit world. This usage seems to have become obsolete but nevertheless we continue to indulge in the display of fireworks on various occasions, varying

from Christmas to the Fourth of July and miscellaneous other celebrations. It has long been recognized that the rocket's red glare and the bombs bursting in air carried with them some effects other than stimulating the eye and ear, and that a fair number of our children suffer from injuries of a serious nature. Of this parents of children are well aware, but the long established impulse to go out and "shoot fireworks" seems to be hard to eradicate. Laws limiting the use and sale of fireworks seem to be hard to enforce and are apparently not particularly popular.

The Food and Drug Administration is now proposing a list of substances to be banned. They include "Fireworks devices producing audible effects (including, but not limited to, cherry bombs, M-8 salutes, silver salutes and other large firecrackers, aerial bombs, pestcontrol bombs, and other fireworks devices) if the audible effect is produced by a charge of more than 2 grains of pyrotechnic composition." This would seem to be a sound procedure which should receive general support on all sides.

50 YEARS AGO



March 1919

The establishment of the Bureau of Child Hygiene of the State Board of Health was noted in this number. A paper on pneumonia offered no specific treatment and commented on the frequency of empyema.

MINUTES OF COUNCIL SOUTH CAROLINA MEDICAL ASSOCIATION

Columbia, South Carolina Sunday, January 12, 1969

The South Carolina Medical Association Council met at the Blue Cross-Blue Shield Headquarters on January 12, 1969, at 11:00 a.m. The meeting was called to order by Dr. John P. Booker, Chairman.

Dr. John Booker, Chairman, asked that the first order of business be the confirmation of the necessity of the meeting of the House of Delegates called for 2:00 p.m. on January 12, 1969. Dr. D. Strother Pope moved that Council confirm the necessity of the meeting. Dr. Joel Wyman seconded the motion. Motion carried.

Dr. E. Kenneth Aycock then explained to Council proposed legislation transferring the responsibility of Title XIX to the State Board of Health and asked Council's opinion as to whether such legislation should be sought. Under the present federal law, the Governor is to designate the state agency to handle Title XIX; however, under existing state laws, he is really prohibited from doing this. It was Dr. Aycock's feeling that a committee should be appointed to meet with the Governor to find out his exact feelings in the matter and whether he feels legislative action is needed at this time. The Welfare Department now handles eligibility under Title XIX and the Board of Health furnishes the screening standards. Dr. Tucker Weston moved that the matter be referred to the Legislative Committee for further action. Dr. Wyman seconded. Motion carried.

As all members of Council had received copies, reading of the minutes of October 16 and November 6, 1968, was dispensed with. Minutes were approved as written.

Dr. C. Tucker Weston, Chairman of the State Board of Health Study Committee, reviewed the general recommendations of his committee concerning the reorganization of the Executive Board of the State Board of Health, which are as follows:

1. The terms shall be staggered for each member.
2. Each term should be limited to three years.
3. Total consecutive services limited to three (3) terms.
4. Members should be selected geographically and by population.
5. Council of SCMA should fill unexpired terms with interval appointments until the next scheduled meeting of the South Carolina House of Delegates.
6. After a board member attains age of 72, this being the age of mandatory retirement, upon his request and on recommendation of the Council of the SCMA, he may at this time become an honorary non-voting member of the executive committee of the State Board of Health.
7. Three (3) outstanding non-medical individuals to be added to the executive committee. The non-

medical members are not be elected by SCMA.

Dr. Waitus Tanner moved that the nominations for the Executive Board of the State Board of Health be made from the floor of the House of Delegates and recommended to the Governor for appointment. Dr. Pope seconded. Motion carried.

Dr. Booker read a letter of resignation from Dr. Martin Teague to be effective February 1, 1969. His resignation was accepted with regrets.

Dr. Teague recommended that Dr. William A. Klauber, Greenwood, S. C., be appointed to fill his unexpired term. Dr. Wyman moved that Dr. Klauber be appointed. Dr. Atwill seconded the motion. Motion carried.

Dr. Tanner nominated Dr. Harold P. Hope as Vice Chairman of Council. Dr. Atwill seconded. Motion carried.

Dr. Booker announced that Dr. Wyman had received a letter from Mr. W. G. Bray, Executive Secretary of the S. C. Epilepsy Foundation, requesting that an Advisory Committee from the SCMA be appointed to work with the Epilepsy Foundation and that the Foundation be given accreditation and recognition by SCMA. It was recommended by Dr. Joseph Waring and Dr. Harold Hope that this be done.

Dr. Wyman recommended that Dr. Frank R. Wrenn, 123 Mallard Street, Greenville, Dr. O. Rhett Talbert, Medical College Hospital, Charleston, Dr. Samuel T. Haddock, 107 Calhoun Street, Anderson, and Dr. Robert M. Prince, Jr., 1845 Assembly Street, Columbia, be appointed as the Advisory Committee. Dr. Teague moved that this committee be accepted. Dr. Pope seconded. Motion carried.

Two members from each District were appointed to the Regional Advisory Group as follows:

I—Dr. Edward F. Parker, 158 Rutledge Ave., Charleston, S. C. 29403. Dr. C. Ford Rivers, Jr., 68 Gadsden St., Charleston, S. C. 29401.

II—Dr. E. DuBose Dent, Jr., Baptist Hospital, Columbia, S. C. 29201. Dr. C. Tucker Weston, 1410 Barnwell St., Columbia, S. C. 29201.

III—Dr. William A. Klauber, Self Memorial Hospital, Greenwood, S. C. 29646. Dr. William L. Mills, Mills Clinic, Prosperity, S. C. 29127.

IV—Dr. Roland M. Knight, 100 Menninger St., Greenville, S. C. 29601. Dr. George W. Smith, 106 John Street, Easley, S. C. 29640.

IV—Dr. William H. Hunter, 1 Hunter Court, Clemson, S. C. 29631. Dr. William R. P. Wilson, 10 Isaquena Road, Seneca, S. C. 29678.

V—Dr. Rion M. Rutledge, 1317 Ebenezer Road, Rock Hill, S. C. 29730. Dr. George C. Adickes, 312 Pendleton Street, Rock Hill, S. C. 29730.

VI—Dr. W. Samuel A. Harris, 1210 N. Kings High-

way, Myrtle Beach, S. C. 29577. Dr. Charles R. May, 210 Market Street, Bennettsville, S. C. 29512.

VII—Dr. Davis D. Moise, 34 E. Calhoun St., Sumter, S. C. 29153. Dr. Robert L. Lumpkin, 2 Memorial Lane, Georgetown, S. C. 29440.

VIII—Dr. V. Wells Brabham, Jr., 950 Holly St., NE, Orangeburg, S. C. 29115. Dr. G. Preston Cone, 660 Pike St., Orangeburg, S. C. 29115.

XIX—Dr. John P. Coan, 450 Kennedy St., Spartanburg, S. C. 29302. Dr. David C. Hull, Pinewood Mall, Spartanburg, S. C. 29303.

Dr. Atwill moved that the councilors for districts not having submitted nominees be contacted for same and that said nominees be automatically elected. Motion seconded by Dr. Weston. Motion carried.

Dr. Booker announced that Dr. McCord had invited the Council to meet at the Medical College for the next meeting. Dr. Atwill moved that the next special meeting be held there. Dr. Wyman seconded. Motion carried.

Dr. Cain urged that as many members of Council as possible attend this meeting. February 19th was tentatively set as the date for said meeting.

Dr. Joel Wyman suggested that Council consider hiring a so-called field man (as an assistant to Mr. Meadors) for SCMA, noting that such a move would entail a raise in fees of at least \$15 a year. After much discussion, Dr. Pope moved that the Chairman appoint a committee to investigate the

feasibility of such action and that President Wyman give a brief outline of his proposal to the House of Delegates at the afternoon meeting. Dr. Weston seconded. Motion carried.

A letter from Dr. Thomas R. Gaines, dated January 3, 1969, regarding proposed tax increases was received as information.

Dr. Booker announced that he had learned that Dr. William L. Perry is hospitalized. Council expressed regrets and hopes for a speedy recovery.

Dr. Joseph P. Cain discussed the changes in the claim form of Blue Shield and stated that Blue Shield would like the approval of Council of the amended form before having same printed. Dr. Cain moved that the form as amended be approved. Dr. Wyman seconded. Motion carried.

Dr. Tucker Weston moved that proposed legislation concerning treatment of minors for venereal disease and pregnancy upon their sole consent and the Uniform Anatomical Donor be referred to the Legislative Committee for consideration. Dr. Wyman seconded the motion. Motion carried.

Dr. Pope presented solely as information legislation that was to be proposed concerning the outdated abortion laws of South Carolina. Dr. Atwill recommended that the Legislative Committee be advised that SCMA is in favor of this or similar legislation. Dr. Tanner seconded. Motion carried.

D. Strother Pope, M.D., Secretary

Minutes of the Special Meeting of the Members of the Corporation of Blue Shield of South Carolina

January 12, 1969

The Special Meeting of the Members of the Corporation of Blue Shield of South Carolina convened at 2:10 P.M., Sunday, January 12, 1969, in the Conference Room of the Plan headquarters, 8220 Old Satchelford Road, Columbia, South Carolina.

I.

The meeting was called to order by the President, Dr. J. Hal Jameson. He stated that at the Special Meeting of the Corporation two years ago, the body approved changes in our Enabling Legislation. A Legislative Study Committee was appointed and as a result of recommendations made by the committee, our status should be changed to that of a mutual insurance company. No changes have to be made in the Constitution or the By-laws. The law does state, however, that we have to make application for a change in status.

Dr. Jameson introduced Mr. Sandow who read Senate Bill 706 which was approved by the Legislature on April 18, 1968, and was signed into law by the Governor on April 19, 1968. The text is as follows:

"To provide that corporations incorporated under Chapters 13 and 14, Title 37, Code of Laws of South Carolina, 1962, shall retain their corporate existence under their original charters and be licensed, regulated, taxed and operated as a mutual insurance company and entitled to do all things a mutual insurance company is authorized to do, subject to all applicable provisions of Title 37; to permit such corporations to write contracts of indemnity and contracts for payment of money directly to the insured; to authorize all corporations licensed to write health and accident insurance and corporations organized under Chapters 13 and 14 of Title 37 to write service benefit contracts to provide any health care service and make payment directly to the provider of such services, in whole or in part, including but not limited to professional services, any institutional care, personal services and supplies; and to repeal Chapters 13 and 14 of Title 37, relating to non-profit hospital and medical services companies."

Mr. Sandow went on to say that a resolution was

drawn up by our attorney as application for change to a mutual insurance company. He advised that the Board passed the resolution subject to approval of the Members of the Corporation. The resolution, as mailed to all Members of the Corporation, was read. Dr. Cain asked if the change to a mutual company would mean a change in the corporate body. Mr. Austin, attorney for the Plan, stated that he had spoken with the Insurance Commissioner and the Attorney General about this and the Attorney General ruled that the body of the membership currently existing would continue as is. We will be governed as a mutual company, taxed as a mutual company, and will no longer have to file rates for approval.

Dr. Cain moved for adoption of the resolution and it was seconded. Dr. Boniface asked what prerogatives this gives Blue Shield. Mr. Austin stated that since we are the only corporation organized under Chapters 13 and 14 it will not give us any prerogatives; we were unique to begin with and will remain that way.

Dr. Boniface asked if a mutual insurance company would be licensed to offer service benefits and Mr. Austin's reply was in the affirmative.

Dr. Irvine asked if Blue Cross and Blue Shield

were going into private enterprise now. Mr. Austin answered that we would remain the same. It was asked how much taxes would run and what effect they would have on our present rates. Taxes will run approximately \$40,000. Mr. Sandow stated that there is no exact answer to how it will affect rates. Taxes on domestic insurance companies are 2% of gross income not to exceed 5% of the net operating gain. Since we work on a basis of no gain, it is conceivable that we will pay no taxes. We will try to break even and the rates should remain the same.

A vote was taken on Dr. Cain's motion and the resolution was approved.

II.

Since the Special Meeting was called in order to approve the resolution, no further motions could be brought before the Members. Dr. Thomas Parker did comment that he thought the Corporation should register a protest against intimations from elsewhere that Blue Cross and/or Blue Shield would use economic compulsion in support of voluntary health care planning.

The meeting adjourned at 2:30 p.m.

William Sandow, Jr., Executive Director

THIRTEENTH GREENVILLE POSTGRADUATE SEMINAR

OFFICERS

President: Dr. M. Gordon Howle

Vice President: Dr. George O. Bailey

Secretary-Treasurer: Mrs. Marie T. Watson

Sponsored by

GENERAL PRACTICE DIVISION
GREENVILLE GENERAL HOSPITAL
GREENVILLE COUNTY MEDICAL SOCIETY
TUESDAY, WEDNESDAY, AND THURSDAY
March 25, 26, 27, 1969

GREENVILLE GENERAL HOSPITAL
Greenville, South Carolina

Please address correspondence to the
Secretary, 101 E. North Street
Greenville, South Carolina 29601

REGISTRATION FEE \$20.00

A PRACTICAL SEMINAR

This program has been prepared with the practicing physician in mind. Our speakers are men of outstanding reputation, our atmosphere informal, and our subjects are those daily problems met by the practicing physician, regardless of particular interest or specialty.

THE OSTEOPATHS

No doubt, many members of the Association have read the reports in the *AMA News* and in the press generally of the action taken by the House of Delegates of the American Medical Association, in Miami, concerning osteopaths. It is entirely possible that many have been surprised at what may have appeared at first as a recognition of osteopathic physicians and their qualifications to render medical service. In fact, the action taken is simply the latest in a long series of attempts by AMA to encourage the upgrading of schools of osteopathy and their standard of training and education to the point where their graduates may become fully qualified to render the highest quality of medical service and thus be entitled to recognition.

It is a fact that cannot be refuted that in most of the States, osteopaths are rendering medical services to large segments of the population. It is also true that in many places there exists a real shortage of qualified doctors of medicine. The osteopaths generally comprise a group better trained to render medical service than any other *except* qualified graduates of accredited medical schools. Recognizing this, the AMA has consistently endeavored to obtain the cooperation of the American Osteopathic Association in the effort to raise the standards of their people to the degree necessary to assure their genuine qualification to perform the services which the people need. This is clearly evident from the objectives as stated in the Report of the Board of Trustees which was the subject of the Miami action, as follows:

1. Assure the provision of the best possible health care to the American people.
2. Make available to students and graduates in osteopathy, education of the same high standards as prevail in undergraduate, graduate and continuing educational programs in medicine.

3. Provide avenues whereby qualified osteopaths may be assimilated into the mainstream of medicine.

To accomplish these objectives, the Report (a) "Recommends that each school of osteopathy improve its teaching program by strengthening its faculty and improving its facilities and resources," and (b) "Invites schools of osteopathy and the agencies which accredit them to consult with the AMA and the Liaison Committee of the Council on Medical Education and the Association of American Medical Colleges in an effort to meet the standards required for accredited schools of medicine."

Actually, these two statements are directly in line with the position taken by the South Carolina Medical Association over the past several years, in that, we have maintained throughout the repeated legislative contests that osteopathic applicants for license to practice medicine should be accepted for examination *if and when* the schools from which they are graduated are shown to have been accredited by the same accrediting bodies which pass upon and approve the standards and curricula of "Grade A" medical schools.

We are pleased that AMA has again firmly stated its position in accordance with our own. Whether or not the invitation will be accepted and the recommendation followed by the American Osteopathic Association and its several schools appears doubtful in view of their history of indifference and the statements by officials of the AOA since the Miami meeting.

The following paragraph is contained in the Reference Committee's report, adopted by the House of Delegates:

"Numerous speakers suggested that the term 'qualified' with reference to osteopaths was difficult to interpret and expressed the wish for further guidance. However, because of the multiple variations in local laws and customs, your

Reference Committee believes that it would be almost impossible to prepare guidelines applicable to every situation."

This sentence in the Report of the Board of Trustees, which was adopted by the House, is important: "Variation in the individual states in respect to licensing and other legal considerations will require individualized responses" to the general objectives and suggestions for methodology.

When one reads the remainder of the items included in the report—those suggesting hospital affiliation—County and State Medical Society membership—Consideration by Specialty Boards, etc.—one might be confused as to their true significance.

For many years the AMA has felt that it would greatly benefit the public health if osteopathic training were equal to our present medical college training, and has attempted to cooperate with the AOA in order to bring the osteopathic schools up to par with our own schools. These attempts have been spurned by the AOA.

The recent action by AMA is a further attempt to insure more thorough training of osteopaths. In effect, it says: "Since we have had no cooperation in our efforts to raise the standards of osteopathic schools—we must try something else."

"We can take osteopathic graduates

whose particular training and abilities are above average and allow those 'qualified' men to serve as interns and residents in our hospitals where we can give them training under approved guidance and supervision."

This policy is suggestive and permissive only and delegates the responsibility of determining who is a "qualified osteopath" to the local medical societies on the same basis as they now determine who is a qualified M.D.

It should be noted that this action passed by a slim majority and the results would have been different if only a few votes had changed.

This action, so far as membership of osteopaths in County Medical Associations and AMA is concerned, is a constitutional change and will come up again in June. Since the constitutional change would require a two-thirds majority, it is possible that this action will not carry.

Despite the foregoing, we have every reason to expect that the AOA and its ardent devotees in South Carolina will attempt to use the action by AMA in a strenuous effort to obtain unlimited licensure for osteopaths in this State. The prospect at this time is for, perhaps, our bitterest contest this year.

M.L.M.

MEETINGS

Urological Post Graduate Seminar will be sponsored by the Department of Urology, Medical College of South Carolina on Friday, April 18. Dr. Willet Whitmore, chief of Urology at Medical Hospital for Cancer & Allied Diseases, New York, will be visiting professor.

For registration write: Dr. Fletcher C. Derrick Jr., Assistant Professor, Dept. of Urology, 80 Barre St., Charleston, S. C. 29402.

The Florida Chapter of the Arthritis Foundation has announced a seminar on Arthritis and Collagen Diseases to be held at the Mayflower Hotel April 18 and 19.

Speakers include Dr. David S. Howell, Dr. William Martel, Dr. Augusto Sarmiento and Dr. Lawrence Schulman.

For more information write: William B. Thirlwell, 555 Bishop Gate Lane, Jacksonville, Fla. 32204.



Dr. Martin Teague, who has practiced medicine in Laurens since 1932, has joined the staff at the State Park Health Center. Dr. Teague attended Davidson College and was graduated from the Medical College of South Carolina. He has served as a state and a national director for the National Tuberculosis and Respiratory Disease Association. **Dr. Charles N. Still**, chief of Neurology Service at William S. Hall Psychiatric Institute, has been certified as a diplomate in neurology by the American Board of Psychiatry and Neurology. **Dr. Robert W. Patton** has become chief of staff at York General Hospital. He succeeds **Dr. James C. Holler**. **Dr. Richard O. Ballew** has become health officer for Lexington County. **Charles Dexter Kimsey** of Atlanta has assumed duties as associate coordinator for Continuing Education and Communications of the S. C. Regional Medical Program.

Dr. William H. Lee Jr. of Charleston has been elected as a member of the board of directors of the National Tuberculosis and Respiratory Disease Association. **Drs. Robert Galphin Jr.** and **Malcolm Goodwin Jr.** of Charleston have received research grants for studies in pulmonary and respiratory diseases. **Dr. W. J. Mullins** of Charleston, **Dr. Guy C. Heyl Jr.** of Aiken and **Dr. L. Clyde Sheehan Jr.** of Columbia have become fellows of the American Academy of Orthopaedic Surgeons. **Dr. Richard H. Crooks** has opened his office for the practice of dermatology at Vardry Street Medical Court, Greenville, S. C.

Dr. Joe E. Freed has become president of the Columbia Medical Society. Other officers include **Dr. Henry W. Moore**, president-elect; **Dr. Lawrence V. Jowers**, vice president; **Dr. M. Tucker Laffitte Jr.**,

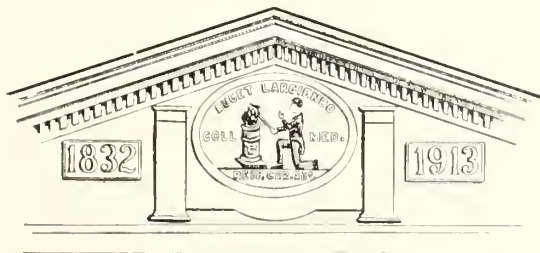
treasurer; and **Dr. Albert E. Cremer**, secretary. **Dr. Edward E. Kimbrough** was named editor of The Recorder. **Dr. C. O. Spann** of Columbia has been appointed to serve on the board of directors of the Richland County Board of Health. **Dr. R. Layton McCurdy** of Charleston recently spoke at the annual meeting of the York County Mental Health Association. **Dr. W. T. Chandler** of Honea Path has been named to the board of directors of the Anderson-Pickens-Oconee Mental Health Bureau.

Dr. Forde A. McIver of Charleston has announced removal of his offices to 65 Gadsden St. for the practice of histopathology, cytopathology and cytogenetics. New officers of the Anderson County Medical Society have been installed recently. They are **Dr. James E. Bleckley**, president; **Dr. Robert Jones Jr.**, vice president; **Dr. William E. Kennedy**, secretary and **Dr. Charles Bailes**, treasurer. State Health Officer **Kenneth Aycock, M.D.**, has been re-elected chairman of the Governor's Advisory Council for Comprehensive Health Planning. **Dr. R. Ramsey Mellette Jr.** of Charleston was principal speaker at the annual meeting of the Marion County Mental Health Association. **Dr. Walter M. Bonner** of Charleston, president of the S. C. Chapter of the Arthritis Foundation, and **Dr. Hunter Rentz** of Columbia, a member of the board were awarded citations at the Association's annual board of directors meeting recently.

Dr. Hugh H. DuBose of Columbia has been named chief of the medical staff at Columbia Hospital. **Dr. Paul T. Hopkins** was named vice chief of staff and **Dr. A. J. Richards Jr.**, secretary. **Dr. Vince Moseley** of Charleston has been named coordina-

tor of the S. C. Regional Medical Program. **Dr. John C. Hawk Jr.** of Charleston is continuing to serve as vice-chairman of the Congress of County Medical Societies. **Dr. Julian Price** of Florence, a past president of the S. C. Medical Association, was speaker at a meeting of the Guilford County Medical Society, North Carolina. He is a former chairman of the board of trustees of the AMA. **Dr. N. J. Knoy** has

been elected chief of the medical staff of Bamberg County Memorial Hospital. **Dr. F. M. Dwight** was named vice chief of staff. **Dr. J. C. Hedden**, district health director in Spartanburg, has been named to the Council of Public Health Consultants of the National Sanitation Foundation. He is vice president of the Spartanburg County Medical Society.



Medical College of South Carolina

Curtis J. Artz, M.D., Professor of surgery and Chairman of the Department of Surgery, at the Medical College of South Carolina, has been named to one of medicine's top honors.

Doctor Artz has been named a 1969 recipient of the Modern Medicine Distinguished Achievement Award. This has been related to a Hall of Fame of medicine. The announcement of Doctor Artz' selection, with nine other physicians and medical educators, appears in the January issue of Modern Medicine.

Dr. Earl H. Godfrey was certified in Neurology by the American Board of Psychiatry and Neurology on December 9.

Dr. Samuel K. Morgan has been elected to membership in the American Society of Hematology at their annual meeting in New York City in September.

Dr. Herzl Spiro, Assistant Professor of Psychiatry and Instructor in Medicine at Johns Hopkins University College of Medicine, has joined the faculty as a Clinical Associate Professor.

Robert S. McCully, Ph.D., also has joined the faculty of the Department of Psychiatry as Professor of Psychology. At present Dr. McCully is Associate Profes-

sor, Cornell University Medical College, Associate Attending Psychologist, The New York Hospital, and Lecturer, the New York Institute of the C. G. Jung Foundation for Analytical Psychology. When Dr. McCully joins the faculty of the MCSC, Department of Psychiatry, he will be Chief of the Department of Psychology.



J. W. Colbert, M.D.

James F. Colbert Jr., M.D., formerly with the National Institutes of Health, Bethesda, Md., has been named Vice President for Academic Affairs at the Medical College. He began in his new position Feb. 1.

Dr. Colbert's duties are to supervise the academic affairs of the Medical College as they relate to the operation of the six schools.

Dr. Colbert, who has been associated with the National Institutes of Health since 1962, comes to the College from his post as Associate Director for Collabora-

tive Programs of the National Institute of Allergy and Infectious Diseases.

He is a graduate of Columbia University College of Physicians and Surgeons, New York City, and is a member of many scientific organizations. He is author and co-author of several publications on the treatment of hepatitis.

Dr. Colbert's previous academic appointments have included: Instructor in Medicine, Assistant Professor of Medicine and Assistant Dean, Yale University School of Medicine. He was also the Dean of St. Louis University School of Medicine, Mo.

THE MONTH IN WASHINGTON

Robert H. Finch, the new secretary of Health, Education and Welfare, is giving health care costs a high priority in tackling the department's problems.

Even before he was sworn in as secretary, Finch made an unannounced call on chairman Wilbur D. Mills (D., Ark.) of the House Ways and Means Committee, which has jurisdiction over HEW's medicare and medicaid programs. Finch afterwards said his staff would confer with Mills' staff to consider legislation or regulations that could combat higher health care costs.

"His staff and my people are going into this to see what we can do about the

skyrocketing costs—especially hospitalization, where 70 per cent of the costs are labor," Finch said.

The former California lieutenant governor said he was thinking about the pilot program in his native state—which he called a para-medical program—whereby long stays in the hospitals are shortened by putting people in intensive care centers. If hospital stays could be shortened, he said, "massive savings would result."

Mills was reported as favoring broadened Medicare benefits or hospital care to cover disabled workers, who, by nature

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of their disabilities, receive Social Security payments—but because they are under 65—are ineligible for Medicare. He also was reported to be concerned over increases in hospital charges and doctors' fees.

Several members of Congress have expressed concern over increases in the federal costs of Medicare and Medicaid. The Johnson Administration's budget for fiscal 1970, starting next July 1, allots \$6.9 billion, up \$636 million, for Medicare and \$3 billion, up \$600 million, for Medicaid.

A bill, introduced by Sen George Aiken (R., Vt.), with Senate Majority leader Mike Mansfield (Mont.) and Sen. Winston Prouty (R. Vt.), as co-authors, would do away with the present "usual and customary charge concept," place all physicians on assignment, and reimburse them through the average payment for the same service provided by the local Blue Shield. Deductibles and co-insurance would be eliminated, among many other changes.

The Labor Department reported that medical costs, including both hospitalization and physicians' fees, rose 7.3 per cent for the calendar year 1968.

Finch said the Nixon Administration's HEW budget requests would be about the same size as the \$17.5 billion submitted by the Johnson administration, but that there would be changes within the overall total. Estimated total federal spending in the health field will rise to \$18.3 billion.

HEW said that national spending for health care, both government and private, continued to rise in fiscal 1968. The total for 1968 was \$53.1 billion, \$33.7 billion private and \$19.4 billion government. This compared with \$47.9 billion (\$32.2 billion private and \$15.7 government) for fiscal 1967. In fiscal 1960, it was \$26.4 billion—\$20 billion private and \$6.4 billion government.

The Defense Department will call up 437 physicians, 23 osteopaths and 25 op-

tometrists in 1969 in the lowest doctors draft in seven years. The total of 485 medical men compared with 1,126 drafted in 1968, 2,329 in 1967, 2,596 in 1966 and 2,830 in 1965.

The stabilization of the buildup of forces associated with the Vietnam war and with a large number of volunteers made it possible to keep the doctors draft low, the Pentagon said. All of the physicians will go into the Army. Some of the osteopaths and optometrists will go into other services. None will go into uniform until July.

* * *

The National Research Council charged that most ambulances in the U. S. are not "providing emergency care to the critically injured." It cited a lack of equipment, supplies and untrained attendants.

The Council said that "hearses and station wagons, commonly used as emergency vehicles," do not carry the necessary equipment or provide the space for such equipment "for the carrying out of modern resuscitative procedures either at the scene of an accident or during transportation." It said "action must be taken to develop and enforce nationwide standards for ambulance service," because accidental injuries are the leading cause of death during the first half of a person's life span.

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FRIDAY, MARCH 21, 1969:

- 2:00 P.M. 1) Welcome and Introductory Remarks:
Psychiatric Institute
Alexander G. Donald, M.D., Director, William S. Hall
2) Recognition of Depressive States: Joseph J. Nannarello, M.D.
3) Treatment Modalities of Depressive States: R. Buckland Thomas, M.D.
Questions and Answers
4) The Disturbed Adolescent: George H. Orvin, M.D.
Questions and Answers
5) Headache (Diagnostic Approach): O. Rhett Talbert, M.D.
6) Headache (Treatment): O. Rhett Talbert, M.D.
Questions and Answers

6:00 P.M. CLOSE

SATURDAY, MARCH 22, 1969:

- 8:00 A.M. 1) Emotional Factors in Geriatric Patients: Walter J. Roberts, Jr., M.D.
2) Evaluation of the Suicidal Patient: James B. Galloway, M.D.
Questions and Answers
3) Panel: Therapeutic Abortion
Alexander G. Donald, M.D.—Moderator
Joseph J. Nannarello, M.D.—Psychiatrist
Heyward Fouche, M.D.—Obstetrician
Joseph E. Sturtevant, B.D.—Minister
Webster Myers, LL.B.—Attorney
4) Recognition of Brain Syndromes: R. Buckland Thomas, M.D.
5) Differential Diagnosis of Brain Syndromes: Joseph W. Taber, Jr., M.D.
Questions and Answers

12:00 NOON CLOSE

NEW SOUTH CAROLINA LAW

Regulations of the Atomic Energy and Radiation Control Act have been filed with the secretary of state. The Regulations cover the use of x-ray producing machines and radioactive materials in the health professions, industry, and academic fields in S. C.

X-RAY MACHINES

The Regulations state that every person who possesses an x-ray producing machine shall register the machine with this Agency by March 31, 1969. (The deadline for registration was extended by the Executive Committee of the State Board of Health from January 15, 1969 to March 31, 1969.)

Registration forms may be obtained from the agency at the address indicated below.

RADIUM

No person shall receive, use, or possess RADIUM except as authorized in a license pursuant to Title A of these Regulations. Those persons presently possessing and/or using RADIUM in the Health Professions, Industry, and Academic Field may obtain the necessary application for licenses from the address indicated below.

REGULATIONS AVAILABLE

Copies of the Regulations may be obtained from the Agency at the address indicated below.

S. C. State Board of Health
Division of Radiological Health
J. Marion Sims Building
Columbia, S.C. 29201

Scientific Sessions of the S. C. Heart Association

GUEST FACULTY:

Denton A. Cooley, M.D. Baylor University College of Medicine Edward C. Lambert, M.D. State University of New York at Buffalo	Henry J. L. Marriott The Rogers Heart Foundation, St. Petersburg, Fla. Alexander S. Nadas, M.D. The Childrens Hospital, Boston
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FRIDAY, APRIL 25, 1969

Presiding—Donald E. Saunders, Jr., M.D., President Elect, S. C. Heart Association

1:30 Welcome—Peter C. Gazes, M.D., President, S. C. Heart Association

1:40 Heart Disease in the Newborn; Its Recognition and Management, Edward C. Lambert, M.D.

2:15 Treatment of Congestive Heart Failure in Children, Alexander S. Nadas, M.D.

3:10 Auscultation 1969, Henry J. L. Marriott, M.D.

3:45 Valve Replacement for Acquired and Congenital Heart Disease, Denton A. Cooley, M.D.

4:20 Panel, William H. Lee, M.D., Moderator, Denton T. Cooley, M.D., Henry J. L. Marriott, M.D., Edward C. Lambert, M.D., Alexander S. Nadas, M.D.

5:00 Adjournment

8:00 Banquet Address—Human Heart Transplantation, Denton A. Cooley, M.D.

SATURDAY, APRIL 26, 1969

Presiding—Grady H. Hendrix, M.D.

9:00 Natural History of Congenital Heart Disease, Alexander S. Nadas, M.D.

9:40 Natural History of Congenital Aortic Stenosis, Edward C. Lambert, M.D.

10:40 Aberration Versus Ectopic, Henry J. L. Marriott, M.D.

11:20 Panel, Peter C. Gazes, M.D., Moderator, Henry J. L. Marriott, M.D., Alexander S. Nadas, M.D., Edward C. Lambert, M.D.

12:00 Adjournment

SUNDAY, APRIL 27, 1969

9:30 Informal Question and Answer Period:

Panel—Peter C. Gazes, M.D., William H. Lee, M.D., Arno Hohn, M.D., John Mueller, M.D., Warren Irvin, M.D., Glenn Askins, M.D.

The editorial staff of the Journal welcomes announcements and news items of general interest to the readership. However, material MUST be in the office of the Editor no later than the 10th of each month in order that the item may appear in the next months' issue.



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The organization of health services in South Carolina as in every state in the nation, has been plunged into a period of rapid change.

"The Comprehensive Health Planning and Public Services Amendments of 1966", Public Law 89-749 and "The Partnership for Health Amendments for 1967", Public Law 90-174, were designed to promote and assist in the extension and improvement of comprehensive health planning and services and to broaden and improve the authorization for research and demonstrations related to the delivery of health services. The declaration of purpose of Public Law 89-749 states "The Congress declares that fulfillment of our national purpose depends on promoting and assuring the highest level of health attainable for every person, in an environment which contributes positively to healthful individual and family living; that attainment of this goal depends on an effective partnership, involving close intergovernmental collaboration, official and voluntary efforts, and participation of individuals and organizations; that Federal financial assistance must be directed to support the marshaling of all health resources—national, state, and local—to assure comprehensive health services of high quality for every person, but without interference with existing patterns of private professional practice of medicine, dentistry, and related healing arts." Further as Secretary Gardner testified to the Senate Subcommittee on Intergovernmental Relations in November, 1966, "The old system of governmental arrangements—unmanageable city

government, inadequate state government, disjointed relations between Federal, State and local levels, and uncoordinated Federal programs—is dying." The import of the two premises above was summarized by Surgeon General William H. Stewart in December, 1966 when he stated "The people shall be served. And new social instruments, institutions and patterns of operation shall be developed to serve them." To strive toward fulfilling our national purpose as stated in Public Law 89-749, the medical services of South Carolina must struggle through a period of transition while seeking better and more efficient methods of distributing health services and meeting the needs of South Carolina's citizens.

The concept of a Partnership for Health is one aimed at the elimination of the charges of stringent Federal control over the use of public health funds allocated to the states. It should evolve into a true partnership on the Federal-State and State-local levels. Flexibility in the use of the funds as determined locally is implicit in the law and has broken down the strict adherence to categories of health services as in the past. Comprehensive health planning is characterized by an integrated, coordinated approach to the total spectrum of health services, manpower and facilities and development of a program of evaluating the needs and the resources available to meet these needs. An essential part of Comprehensive Health Planning activities is the development of methods of program evaluation, since the ultimate test of our planning efforts will be in the performance.

In order to implement the provisions of public Law 89-749, Governor Robert E. McNair in February, 1967 designated the State Board of Health as the single agency to administer the program in South Carolina. This was reinforced in March, 1968 when the General Assembly of the State of South Carolina enacted the "State Comprehensive Health Planning Act." This Act formally designates the State Board of Health "to be the single and official State Agency for administering the State's Health Planning functions as defined in the Federal Act." It authorized a full-time salaried staff for the Office of Comprehensive Health Planning with the duty of creating a State Comprehensive Health Plan. This plan is required to include:

- (1) a statement of broad health goals;
- (2) a delineation of planning regions or areas;
- (3) demographic and epidemiologic data;
- (4) inventories and analysis of existing health-related programs and resources;
- (5) an assessment of the availability and utilization of health facilities, services and manpower in relation to identified health problems;
- (6) statement of short and long-range health objectives to meet identified health needs;
- (7) list of priorities for action in accomplishing objectives;
- (8) a schedule for plan implementation, including recommended legislation, financing, evaluation, and organizational responsibilities.

The State Agency will prepare this plan in coordination with the advice and recommendations of the 25 member South Carolina Advisory Council. In accordance with the "State Comprehensive Health Planning Act" the Governor has appointed the 25 member Council. The membership of the council consists of representatives of state, and local agencies and nongovernmental organizations concerned with

health and consumers of health services. However, in accordance with the state and federal laws, consumers constitute a majority of the membership. Within this Council five committees have been established to facilitate directed effort in five areas. The State Plan Committee assists the Agency with the development of the State Plan. The Legislative Review Committee studies, evaluates and makes recommendations on state and local legislation affecting health to determine the consistency of this legislation with the concept of planning as delineated in the State Plan, and to recommend amendments to legislation or additional legislation required to carry out the purposes of state-wide comprehensive planning. The Committee on Interagency Coordination examines the programs of the various State and Federal agencies in so far as they pertain to implementation of the State Comprehensive Health Plan and helps minimize inconsistencies or duplications among these various programs. The committee members have authority to meet with representatives of other agencies in order to obtain data for reporting to the Council. The Committee on Regional Health Planning recommends methods of stimulating and guiding regional health planning, e.g. assist in establishing regional health planning agencies, and acts as liaison between regional planning councils and the Advisory Council on Comprehensive Health Planning; makes recommendations to the Council as to whether local health planning is in consonance with the State Plan for comprehensive health. And last, the Committee on Health Problems and Needs identifies health needs and unsolved health problems and prepares recommendations for Council action pertaining to selection of methods of meeting these needs through the use of available resources or development of new resources. To insure that the health care programs are relevant to the needs of the people to be served, a Health Forum has been constituted. This Forum

allows for the involvement of the indigenous public both in the planning and implementation of the health programs. It is hoped that the agencies represented by the Forum will, for example, assist in transporting people to where health services are available for them. The Forum is composed of 91 members, 40 of whom represent the medical professions. The first meeting of the Forum took place in July, 1968.

Conceivably, the comprehensive health planning program could develop into one of the most far reaching health programs in history. Medical leadership on the local level is of utmost importance to provide the necessary qualified leadership to keep the program within the proper channels. Similarly, close contact with consumers of health services is essential. The people who are in need of health services are ultimately aware of their problems in obtaining such services and of the efficiency of implemented programs. During the maturation of the program it will be necessary through an educational process to impress on all persons involved that our objective is not to do things *to* each other or even *for* each other but to learn how to do things *with* each other.

Basically, the comprehensive health planning act contains five sections that are relevant. Grants will be made available in each of these sections as shown below: *Grants to States for Comprehensive State Health Planning*:

Sec. 3 amends Section 314 of the Public Health Service Act to read as follows:

"Sec. 314 (a) (1) Authorization.—In order to assist the States in comprehensive and continuing planning for their current and future health needs, the Surgeon General is authorized during the period beginning July 1, 1966, and ending June 30, 1968, to make grants to States which have submitted, and had approved by the Surgeon General, State plans for comprehensive State health planning. \$2,500,000 for 1967 fiscal year.

(2) State Plans for Comprehensive State Planning must:

A. designate or provide for the establishment of a single State agency, which may be an interdepartmental agency, as the sole agency for administering or supervising the administration of the State's health planning functions under the plan;

B. provide for the establishment of a State health planning council, which shall include representatives of State and local agencies and nongovernmental organizations and groups concerned with health, and of consumers of health services, to advise such State agency in carrying out its functions under the plan, a majority of the membership of such council shall consist of representatives of consumers of health services;

C. include policies and procedures for expenditure of funds designed to provide for comprehensive State planning for health services (both public and private), including the facilities and persons required for the provision of such services, to meet the health needs of the people of the State;

D. provide for encouraging cooperative efforts among governmental or non-governmental agencies, organizations and groups concerned with health services, facilities, or manpower, and for cooperative efforts with similar groups in the fields of education, welfare, and rehabilitation;

E. not to supplant non-Federal funds;

F. proper methods of administration including merit system.

(3) (A) State Allotments: will be based on population and per capital income; will not be less than 1% of national appropriation. Unused balance can carry over to next year.

(B) Reallocation of funds not required by a State to other States.

(4) Payments to States: Federal share shall be all, or such part as the Surgeon General may determine, of the cost of such planning.

Project Grants for Area-wide Health Planning:

Sec. 314(b). The Surgeon General is authorized from July 1, 1966 through June 30, 1968, to make, with the approval of the State agency administering a plan approved under sub-section (a), project grants to any other public or nonprofit private agency or organization to cover not to exceed 75% of the costs of projects for developing and revising comprehensive regional, metropolitan area, or other local area plans for coordination of existing and planned health services, including the facilities and persons required for provision of such services. \$5 million for the 1967 fiscal year.

Project Grants for Training, Studies, and Demonstrations:

Sec. 314 (c) Similar authorization for grants to any public or nonprofit private agency, institution, or other organization to cover all or any part of the cost of projects for training, studies, or demonstrations looking toward the development of improved or more effective comprehensive health planning through the nation. For the purposes of this subsection, \$1.5 million for fiscal 1967.

Grants for Comprehensive Public Health Services:

Sec. 314(d) (1) Authorization of Appropriations: \$70.0 million for fiscal 1968 to allow the Surgeon General to make grants to State health or mental health authorities to assist the States in establishing and maintaining adequate public health services, including the training or personnel for State and local health work.

(2) State Plans for Provision of Public Health Services must:

A. provide for administration by the State health authority (mental health by State mental health authority);

B. include policies and procedures for expenditure of funds;

C. assure that (i) the funds paid to the State will be used to make a significant contribution toward providing and

strengthening public health services in the various political subdivisions in order to improve the health of the people; (ii) such funds will be made available to other public or nonprofit private agencies, institutions, and organizations, in accordance with criteria which the Surgeon General determines are designed to secure maximum participation of local, regional, or metropolitan agencies and groups in the provision of such services; (iii) not supplant non-Federal funds.

D. provide for furnishing public health services under the State plan in accordance with such plans as have been developed pursuant to subsection (a) of section 314;

E. provide that services will be in accordance with standards prescribed by regulations, including standards of scope and quality;

F. provide for proper administration including merit system;

G. provide for annual review and modification of the plan;

(3) Allotments: Based on population and financial need, except no State will get less than the total amounts allotted for the 1967 fiscal year.

(4) Payments to States: Based on Federal share estimated in advance, expenditures of nonprofit private agencies, organizations, and groups shall, subject to regulations, be regarded as expenditures by a State or a political subdivision.

(5) Federal share is 100% less that percentage which bears the same ratio to 50% as the per capita income of such State bears to the per capita income of the United States; but it will be no less than 33.33% nor more than 66.66%.

(7) At least 15% of a State's allotment shall be for mental health.

Project Grants for Health Services Development:

Sec. 314(e). \$90 million are authorized for the 1968 fiscal year for grants to any public or nonprofit private agency, institution, or organization to cover part of the cost of (1) providing services to meet

health needs of limited geographic scope of specialized regional or national significance, (2) stimulating and supporting for an initial period new programs of health services, or (3) undertaking studies, demonstrations, or training designed to develop new methods or improve existing methods of providing health services. Grants pursuant to clauses (1) and (2) must accord with the plans developed pursuant to subsection (a) of Section 314.

Interchange of Personnel with States
(Section 314(f))

General

Sec. 314(g) (1) All regulations applicable to grants to states under subsection (a) shall be made after consultation with a conference of the State health planning agencies. All regulations applicable to grants to States under subsection (d) shall be made after consultation with a conference of State health authorities (mental health with State mental health authorities). In so far as practicable, the Surgeon General shall obtain the agreement prior to the issuance of such regulation of the State agencies with whom such consultation is required.

Continuation of Grants to Schools of Public Health for Fiscal 1968;

Continuation of Authorization for Training of Personnel for State and Local Health Work; Encouragement of Cooperation between the States.

Addenda:

Summary of Appropriations Authorized:

(in millions of dollars)

F. Y. 1968 F. Y. 1969

7.0	10.0	Comprehensive State Health Planning (a)
7.5	10.0	Areawide Health Planning Project Grants (b)
2.5	5.0	Health Planning Training, Studies, and Demonstrations (c)
70.0	90.0	Comprehensive Public Health Services (d)
90.0	95.0	Project Grants for Health Services Development (e)
5.0	6.0	Schools of Public Health

Formula Grants to be replaced by Comprehensive Public Health Services Grants:

Cancer
Chronic Illness
Dental Health
General Health
Heart Disease
Radiological Health
Tuberculosis
Mental Health

Project Grant Categories to be replaced by Health Services Development Project Grants:

Cancer Demonstrations
Mental Retardation Planning
Neurological and Sensory Disease Services
Tuberculosis
Venereal Disease Control
Community Health Services

For further information about Community Health Planning, write to:

E. Kenneth Aycock, M.D.
State Health Officer
S. C. State Board of Health
Columbia, South Carolina 29201

or

Mr. S. J. Ulmer, Jr., Director
Office of Comprehensive Health Planning
S. C. State Board of Health
Columbia, South Carolina 29201

DEATHS

Dr. Clay Welborn Evatt

Dr. Clay Welborn Evatt, 71, Charleston physician and chairman of the Charleston County Board of Health died January 31, 1969.

Dr. Evatt was born in Anderson County Sept. 16, 1898.

He attended Anderson County schools, Epworth Orphanage High School, and was graduated from the University of South Carolina. He received his medical degree from the Medical College of Virginia and interned at St. Luke's Hospital and McGuire Clinic.

Dr. Evatt also graduated from Trudeau School of Tuberculosis. He did graduate work in Richmond, Va., New York City and Chicago. He was chief resident of the Department of Ophthalmology, Brooklyn Eye and Ear Hospital.

He co-founded the first tuberculosis clinic for Negroes in South Carolina.

He was past president of the South Carolina Society of Ophthalmology and Otolaryngology, the Eye, Ear, and Nose and Throat Society of South Carolina. He was past vice president of the Medical Society of South Carolina.

Dr. Evatt began practice in Charleston in 1935. He was on the staff of the Medical College of South Carolina, Roper, St. Francis, Baker Memorial, and McClellan-Banks Hospitals.

Dr. Evatt became associate professor of ophthalmology at the Medical College of South Carolina in 1959 and was voted the rank of professor emeritus of ophthalmology in 1967. He was co-founder of the South Carolina Eyebank.

He was departmental editor of Southern Medicine and Surgery and was the author of more than 30 papers.

He was a member of the Pan-American Society of Ophthalmology, Association of American Physicians and Surgeons, Inc., and the International Congress of Ophthalmology.



C. W. Evatt, M.D.

He was a member of Bethel Methodist Church, Carolina Yacht Club, S. C. Historical Society, Country Club of Charleston, Rotary Club, New England Society, St. Andrew's Society, Chamber of Commerce, and the Charleston Development Board.

Dr. Evatt was also in the Pendleton Farmers Association, Landmark Lodge No. 76 A.F.M. and the Committee of One Hundred of Emory University.

Active in scouting activities for more than 35 years, Dr. Evatt had served on the executive board of the Coastal Carolina Council Boy Scouts of America and served many years as medical examiner without pay. He was still a member of the council at his death.

Dr. Evatt contributed a number of papers to medical literature. He was active in organized medicine, and served as

Councillor from the First District for the South Carolina Medical Association for a number of years.

Dr. James Dusenberry

Dr. James Franklin Dusenberry Sr., 58, chief radiologist at Mullins Hospital and St. Eugenia Hospital in Dillon, died January 24, 1969 in Mullins.

A native of Ninety Six, Dr. Dusenberry was graduated from the University of South Carolina and the Medical College of South Carolina.

He was a member of the South Carolina Medical Association, the American Medical Association, Pee Dee Radiology Society and Pi Phi medical fraternity.

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Dosage: One tbsp. in at least 3 oz. water or citrus juices, twice daily, after meals.

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COMBINATION PRODUCTS

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Cold Prep.—General. o-t-c

Manufacturer: Dorsey Laboratories

Composition: Phenylpropanolamine HCl 6.25 mg. Chlorpheniramine maleate 0.5 mg.

Indications: Children's nasal congestion due to the common cold or nasal allergies.

Contraindications: None mentioned.

Dosage: Children—6 to 12 yrs.: 2 tabs. q.i.d. Not for children under 6 yrs. unless recommended by physician.

Supplied: Tablets, chewable—bottles of 40.

GELUSIL-M

G. I. Prep.—Antacids. o-t-c

Manufacturer: Warner-Chilcott Laboratories

Composition: Each 5 ml contains: Magnesium trisilicate 0.50 gm. Aluminum hydroxide 0.25 gm. Magnesium hydroxide 0.20 gm. with spearmint flavor.

Indications: Symptomatic relief of peptic ulcer, gastritis, heartburn, hiatal hernia, esophagitis, and other conditions for which control of gastric hyperacidity is required.

Contraindications: None mentioned.

Dosage: One to two tsp. between meals and at bedtime, or whenever symptoms occur.

Supplied: Bottles—6 and 12 fl. oz.

TINACTIN Powder

Fungicide-Topical. Rx

Manufacturer: Schering Corporation

Nonproprietary Name: Tolnaftate

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Contraindications: None mentioned.

Dosage: Apply locally twice a day for 2 to 3 weeks, alone or adjunctively with Tinactin solution or cream.

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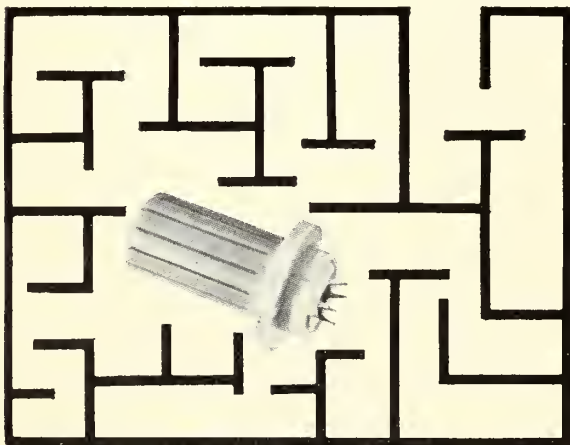
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MALNUTRITION IN SOUTH CAROLINA

AS SEEN BY PRACTICING PHYSICIANS

JULIAN P. PRICE, M.D.
E. CONYERS O'BRYAN, JR., M.D.
Florence, South Carolina

What is the nutritional status of the people of South Carolina? Is malnutrition prevalent on a large scale and if so, why? What is the relationship between malnutrition, hunger and poverty? How best can the battle against malnutrition be waged—through increased federal programs of relief, through public health measures, through education?

These questions are being discussed and debated today on the local, state, and national level. Studies and reports and opinions are presented, charges and countercharges are being made and the public is confused and finds it hard to know what to believe.

In the babel of voices the one rarely heard is that of the man who is so close to the problem, the practicing physician. It is not difficult for a physician to accumulate impressions as to the general condition of the individuals in his practice. As he sees patients in the office, in the hospital, in clinics and in their homes, he has ample opportunity to study them. Being trained to observe, he not only sees the disease or condition of the moment but appraises the patient as a whole—his physical makeup, his social background,

his mentality, his financial stature and his degree of education. From these observations he draws conclusions which are difficult to reduce to mathematical formulae and yet which may present as true a picture as would a table of statistics. Statistics are of great value in the study of disease and nutrition but they should complement and not replace good clinical observation.

With these thoughts in mind one of us (J.P.P.) sent a letter to every licensed general practitioner, internist, and pediatrician as well as county health officer in the state. Each physician was asked to answer eleven specific questions relative to malnutrition. To avoid any misunderstanding of the word, we gave this definition in our first paragraph: "Malnutrition is a condition in which the body fails to receive and/or assimilate its proper nutritive requirements (proteins, minerals, amino acids, fatty acids and calories). It may be due to an inadequate intake of food, to an unbalanced diet, or to an inability of the body to absorb and utilize the food ingested. It may be mild, moderate, or severe. Certain laboratory data are of help in the evaluation of malnutrition but the ulti-

mate diagnosis is based upon the clinical judgment of the physician."

The response to our request was outstanding. Replies were received from 417 individuals, 46% of the total number to whom the questionnaire was sent. (Unfortunately the return from the county health officers was so small that we did not think it representative and it is not included in our report)

In this paper we are presenting the questions and a summary of the answers which we received, without editorial comment. We believe the information which we have accumulated should be allowed to speak for itself.

The following results were received and are tabulated below:

(1) Approximately what percentage of your patients show evidence of malnutrition?

	Less than 1%	Over 5%	The Mean
Internists	60%	2%	1%
Pediatricians	50%	5%	1-2%
General practitioners	40%	12%	1-2%

(2) What percentage of these cases of malnutrition is mild, moderate or severe?

	Mild	Moderate	Severe
Internists	62%	32%	6%
Pediatricians	70%	20%	10%
General practitioners	75%	15%	10%

(3) What are the main causes of the malnutrition which you see? (These were rated as a **** for the most severe down to a *.

	Neglect	Chronic disease	Poor diet	Inability to get food	Parasites
Internists	*	****	***	*	*
Pediatricians		***	****	*	*
General practitioners		***	****	*	**

(4) In what segment of your practice do you find malnutrition? (Rated by percentage)

The internists indicated that four out of five of their patients with malnutrition were of the low income or poor economic group, four of five were senior citizens, and four of five had education of a gram-

mar school level or less. They found no significant differences between the sexes or races.

The pediatricians reported 70% of the children with malnutrition coming from poor or low income families and about 80% from families with little education. There was no difference between the sexes but the Negroes outnumbered the whites two to one.

The general practitioners' appraisal was essentially that of the internists' except that, like the pediatricians, they found Negroes outnumbered the whites two to one.

(5) How many of the following conditions have you seen in the past twelve months? (*This represents the sum total cases of the entire 417 physicians reporting.*)

	Internists	Pediatricians	General Practitioners
Marasmus	34	48	78
Pellagra	9	2	60
Scurvy	10	2	12
Beri-beri	3	2	1
Rickets	0	24	58

(6) Do you think there are people in your county with severe malnutrition who have not been examined by a physician?

Almost all of the physicians answering this question stated that they thought there was a small number of people with severe malnutrition in their county who had not been seen by a doctor of medicine.

(7) What nutritive requirements are lacking most frequently in your patients with malnutrition?

The internists responded with a **** rating for proteins and a * rating for too many calories. The pediatricians had a **** rating for both protein and iron and a ** rating for vitamins. The general practitioners had a **** rating for protein with *** rating for iron and vitamins.

(8) Indicate the relative importance of the following factors in producing malnutrition in your patients: ignorance, indifference, poverty.

In all three groups ignorance was listed as the factor of greatest importance in producing malnutrition. This was followed closely by indifference. Poverty was said to play a role but not as dominant a role as the other two factors.

(9) How does the general nutrition of your patients today compare with the condition which existed when you began your practice?

The internists responded with **** "much better." The pediatricians responded with **** "improved." General practitioners responded with "improved" in 83% and no change reported by 17%.

(10) What bad eating habits are most prevalent in your patients?

The internists responded with an overwhelming majority believing that too many calories was far and away the greatest problem. The pediatricians thought "junk eating" was the main problem with attention being given to too

much milk and also to too many calories. The general practitioners listed too many carbohydrates as the worst eating habit with too many calories and "junk food" being listed in about half the numbers and too many carbohydrates.

(11) What are the greatest needs of the people of South Carolina today in the fields of nutrition and health?

Over ninety per cent of the physicians who participated in this study listed education as far and away the greatest need in our fight against malnutrition.

Summary

We have presented, without editorial comment, the results of a study of malnutrition in South Carolina. A questionnaire was sent to all the licensed general practitioners, internists, and pediatricians in the state. Four hundred and seventeen physicians responded to our request for information and it is on the basis of their answers that this report is made.

Comparative Histological Study of the Tympanic Ganglion—R. G. Mahon Jr., M.D. and Makoto Igarashi, M.D. (Charleston) Laryngoscope 78:334-343 (Mar) 1968

The frequency of existence, location and morphological appearance of ganglia and ganglion cells in the tympanic plexus of human, squirrel monkey, cat, and rat temporal bones was investigated using light microscopy and horizontal serial sections. Only the human, cat, and squirrel monkey had ganglia but all species had ganglion cells in the plexus. Positive findings were present in 91% of the human, 76% of the cat, 12% of the squirrel monkey and 25% of the rat temporal bone specimens. The location of the ganglia and ganglion cells could be correlated to the proximity of the cervical autonomic ganglia that contribute to the tympanic plexus. There was also noted to be a morphological resemblance between several of the ganglia and their vascular elements and the glomus tympanicum.

SOUTH CAROLINA MATERNAL MORTALITY

REPORT FOR 1966

WILLIAM W. KELLETT, III, M.D.

E. J. DENNIS, III, M.D.

Medical College of South Carolina

This yearly analysis is undertaken through the South Carolina Medical Association Maternal Health Committee. The Committee attempts to evaluate each maternal death utilizing material submitted by the physician reporting the death. In some case, it is necessary to send health workers into the community to obtain more information about the deceased patient and her environment. Maternal mortality is an important indicator of the adequacy of maternity care and evaluation of the deaths aids in demonstrating areas for improving our state's maternity care. It should be understood that it is not the intention of the Committee to judge or castigate those involved with maternal deaths, but rather it is our intent to upgrade the care of the pregnant female in South Carolina.

A maternal death is a "death from any cause of a woman during pregnancy or within 90 days of the termination of pregnancy irrespective of the duration of the pregnancy at the time of termination or the method by which it was terminated."

In 1966 there were 50,653 live births reported in South Carolina and 36 maternal deaths reported. By comparison in 1964 there were 56,874 births and 36 deaths and in 1965, 52,449 births with 41 deaths reported. Of the total births in 1966, 30,118 were white and 20,535 non-white. The maternal deaths are listed in Table I according to race and legitimacy.

Table I

	Non-White	White
No.	28	8
Legit.	22	7
Illegit.	5	1
Unknown	1	0

The overall rate or incidence of maternal death per 10,000 live births was 7.1 as compared with 7.8 in 1965. This is an incidence of one death for every 1,408 live births in South Carolina.

Table II shows the age and parity distribution:

Table II

	Non-White	White
Age	17-43	17-41
Average Age	29.3	28.8
Primipara	7	1
Secundipara	0	2
Multipara	17	3
Unknown	4	2

Table III lists the primary causes of death. In many cases there were several factors that contributed to the death but as each case was reviewed by the Committee, a primary cause of death was assigned.

Table III

Primary Causes of Maternal Death

Hemorrhage	12
Toxemia	5
Sepsis	4
Cerebral Vascular	3
Pulmonary Embolus	3
Amniotic Fluid Embolus	2
Coronary Thrombosis	1
Sickle Cell Anemia	1
Lymphoma	1

A total of 11 patients were reported to have had toxemia of pregnancy and four of these had full blown eclampsia. Of these 11 patients, only two had no prenatal care and neither one of these was an eclamptic.

Table IV

	Non-White	White
Eclampsia	3	1
Pre-eclampsia	6	0
HCVD	3	0
Unknown	6	3
No toxemia	10	3

The 12 deaths attributed to hemorrhage deserve further analysis. A breakdown of the causes of hemorrhage is shown in Table V.

Table V

Causes of Deaths due to Hemorrhage

Ruptured uterus	5
Abruptio Placentae	3
Ruptured Ectopic	1
Placenta Previa	1
Postpartum Hemorrhage	1
Afibrinogenemia	1

There were five cases reviewed in which death was thought to be due to blood loss secondary to a ruptured uterus. One of the cases was a 300+ pound woman admitted in labor with a transverse lie and fetal death in utero. She suddenly developed shock and died and the autopsy reported a ruptured uterus with two liters of blood intraperitoneally. Another case of irreversible shock was noted 2½ hours after a routine delivery and was thought to be due to a ruptured uterus. The third case of ruptured uterus resulted from a difficult delivery of a 13 pound infant due to shoulder dystocia. The patient was a 43 year old gravida 18. A fourth ruptured uterus was the result of a midforceps rotation. This rupture was confirmed at the time of emergency hysterectomy 14 hours postpartum. The last patient with ruptured uterus labored for 24 hours at home before calling a midwife, who delivered the infant and sent the patient to the hospital where she died before blood could be given. None of the three patients thought to have abruptio placentae had

any prenatal care. Two of these died in the emergency room, undelivered, with vaginal bleeding and shock. The other case was documented at the time of cesarian section. There was one case of death due to hemorrhage from a ruptured ectopic pregnancy noted on exploratory laparotomy. Another death due to hemorrhage occurred in the emergency room and was thought to be due to a placenta previa. One questionnaire was never completed but information from the death certificate attributed death to post-partum hemorrhage after a routine vaginal delivery. The last death due to hemorrhage occurred in a 21 year old girl with documented afibrinogenemia 1½ hours after normal vaginal delivery of a healthy child.

Sepsis was thought to be directly related to four deaths. One case was a 23 year old girl with toxemia of pregnancy who refused to be hospitalized. She developed chills and fever, delivered at home and died at home. Another death occurred in a diabetic with azotemia who died two days postpartum with elevated temperature. The third case due to sepsis was on the seventh day after cesarian section day. The other case in this group was incomplete.

One of the deaths attributed to cerebrovascular accident occurred suddenly during a routine delivery in a patient with known hypertension. Another occurred in an eclamptic with severe hypertension 24 days postpartum. The third case is incomplete.

A pulmonary embolus was thought to be the cause of death in a patient who died suddenly at home ten days after a cesarian section. Another was documented by autopsy in a 31 year old female who died suddenly at home. She had a uterus of 10-12 weeks size due to a twin pregnancy. The third death by pulmonary embolus was in a 32 year old female seven days after a tubal ligation who was dead on arrival at the Emergency Room.

The two deaths due to amniotic fluid

embolus were both documented by autopsy.

There were two deaths by aspiration. One occurred during delivery, the other 21 days postpartum while the patient was intoxicated.

A lymphatic lymphoma caused a maternal death one month after delivery. Sick cell disease with crisis and sepsis claimed one victim, and coronary thrombosis another. Acute pulmonary edema was listed as the cause of death on two death certificates but these cases were never reviewed due to lack of sufficient information.

Table VI shows the outcome of the pregnancies.

Table VI
Outcome of Pregnancy

	Non-White	White
Delivered	21	6
Not Delivered	7	1
Aborted	0	1

Of the 27 patients who delivered, 16 were live births and 11 were stillborn. Twenty-two of the 27 deliveries were attended by doctors and four unattended. Actually midwives were not directly associated with any maternal deaths although one was summoned after the patient had delivered and bled into shock. In 1966 there were 465 licensed midwives who attended about 4,000 deliveries, which is about 8.2% of all South Carolina deliveries.

Table VII shows the time of death in relation to labor.

Table VII
Time of Death in Relation to Labor

Antepartum	5
Intrapartum	4
Postpartum	26
Abortion	1

Of the 26 postpartum deaths, the majority occurred in the first week as shown in Table VIII.

It is interesting to note in Table IX that about two-thirds of the patients whose prenatal history is known had more than three visits for prenatal care.

Table VIII
Time of Postpartum Deaths

Day 1	14
2	1
3	1
4	0
5	1
6	1
7	1
8	1
9-15	2
15-	4

Table IX
Prenatal Care

Visits	Non-White	White
0	6	1
1-2	1	
3-5	10	1
6 or more	4	1
Adequate	2	1
Unknown	6	3

In every case reviewed by the Committee, an attempt was made to determine which of these 36 maternal deaths in South Carolina were preventable. Sixteen deaths were considered preventable, fourteen nonpreventable and in six cases this factor was undeterminable due to a paucity of information.

South Carolina is making slow but steady progress in reducing the incidence of maternal deaths per live births. Unfortunately, this progress has not improved our State's very poor national standing, because maternal deaths are being prevented in many other states.

In 1966, 33% of the deaths were caused directly by shock secondary to acute blood loss. Some of these patients may be salvaged in the future by having more accessible blood for emergency use and personnel better trained and equipped to handle the emergency. Some of the patients with toxemia and all three patients with abruptio placentae had no prenatal care. Better health education and more prenatal clinics are needed to care for these people. We as physicians are obligated to improve the standards by which the pregnant female in South Carolina is handled.

MYCOPLASMA PNEUMONIAE OUTBREAK IN SOUTH CAROLINA

WILLIAM M. JOHNSON, M.D.*

Mycoplasma pneumoniae (PPLO, primary atypical pneumonia, Eaton agent pneumonia) produces a febrile respiratory infection characterized by pulmonary lesions, constitutional symptoms, cough, sputum, a paucity of physical findings, and a prolonged convalescence. Considerable information exists regarding the clinical spectrum of *M. pneumoniae* infection, however, data regarding the epidemiology of the organism is scanty.

This confirmation of an outbreak of *M. pneumoniae* at one of the colleges in the State suggests that the infection may be more common than generally recognized.

The Outbreak

Many students coming to the school's infirmary during November, 1968 with a flu-like illness were noted to have icteric serum on routine complete blood counts. Symptoms for the cases included an insidious onset of sore throat, swollen cervical glands, fever, headache, nausea, chills, non-productive cough, and substernal discomfort. Physical findings included afternoon spiking temperatures (99°-103°), a congested pharynx, cervical adenopathy, wheezing, and basilar rales. White blood counts were in the normal range with atypical lymphocytes noted in some cases. Spiking temperatures persisted for 4 or 5 days and the illness lasted approximately ten days.

Eight cases of mycoplasma pneumonia have been confirmed thus far. Specialized

media containing methylene blue for isolation of mycoplasma confirmed *M. pneumoniae* in three cases. Complement fixation titers against the organism gave diagnostic titer rises in six cases. In one case the isolation of the organism and diagnostic titer rises were demonstrated.

Complement fixation titers on the eight cases showed no rise to influenza A and B, however, an outbreak of influenza A₂ has been confirmed on campus with cases being diagnosed in late November. Convalescent sera are being collected on students coming to the infirmary during November to define further the extent of the outbreak.

The state laboratory is capable of confirming the diagnosis and invites specimens of suspected cases from both physicians and hospitals. Throat washings, acute, and convalescent sera are the recommended specimens.

Epidemiology

Mycoplasma pneumoniae infections occur in 4 to 5 year cycles. The disease is world-wide in distribution with epidemics noted especially in institutions and military populations. In temperate climates the incidence is greatest during the late fall and winter months. This emphasizes the importance of prolonged close personal contact, characteristic of these seasons, in the epidemiology of this disease. The reservoir of infection is man and the disease is probably spread by droplet inhalation or contact with discharges from the nose and throat of infected persons.

*Epidemic Intelligence Officer, S. C. State Board of Health.

There are no racial or sex predilections and all ages are affected. However, most cases are seen in children and young adults. The incubation period is variable and ranges between 1 to 4 weeks but very commonly is 10-15 days. Signs of pneumonia are present by x-ray or physical examination in over half of the cases.

Summary

An outbreak of *M. pneumoniae* is described. It is suggested that the infection is more common than is generally recognized. The epidemiology of the organism is discussed and physicians are encouraged to submit specimens to the state laboratory for confirmatory diagnostic studies.

NEO-NATAL ANATOMY

Dr. E. B. Ruth, Department of Anatomy, Johns Hopkins University, will teach the anatomy of the new born again this summer. The course will begin on Monday, June 30, and continue through Friday, August 8. It will consist of lectures, dissection and demonstrations, and will be of special interest to pediatric surgeons and others concerned with problems relating to the anatomy of the young infant.

Those interested should contact Dr. James Ward, Department of Pathology or Dr. I.S.H. Metcalf, Department of Anatomy, Medical College. This course is separate from the regular summer course in Human Gross Dissection, which also will be offered.

THE EVALUATION OF LEFT VENTRICULAR MYOCARDIAL FUNCTION IN PATIENTS UNDERGOING CARDIAC SURGERY*

JOSEPH W. LINHART, M.D.**

In the evaluation of a patient with valvular or coronary artery disease, the history and physical findings may disclose that a significant functional impairment is present. It is not generally possible from the clinical examination to separate adequately that limitation due to mechanical factors (such as valvular disease) from that due to a concomitant abnormality of the myocardium. The rheumatic process itself, or changes secondary to a valvular lesion may result in such significant changes in the myocardium that the status of the heart muscle becomes the most important factor relative to the patient's operative risk and subsequent morbidity. Myocardial function may also be adversely affected by coronary artery disease increasing the functional limitation in patients with valvular disease. This is of additional importance now that surgical measures for the relief of isolated arteriosclerotic heart disease are available.

In order to gain information regarding the myocardial status in a given patient, various physiologic and angiographic procedures are performed in exercise and cardiac catheterization laboratories. The

presently clinically applicable examinations include: 1)

Measurement of left ventricular end-diastolic pressure (LVEDP) and cardiac index (CI).

Although a high LVEDP was once considered to indicate left ventricular failure, we now know that the LVEDP may be elevated due to a pressure load (aortic stenosis) or volume load (aortic or mitral regurgitation), and no evidence of left ventricular failure or poor left ventricular function may be present. Similarly, a reduction in CI does not necessarily indicate poor myocardial function in patients with valvular disease. An elevated end-diastolic pressure in patients with coronary artery disease has more significance however, as our studies have invariably demonstrated a decrease in left ventricular function in these patients.

Since measurement of resting intracardiac pressure and cardiac index may provide incomplete data in some cases, the patient's response to: 2) *Muscular exercise* can be determined.

The relationship between LVEDP, cardiac output, stroke work and volume, and oxygen consumption is determined at rest and during exercise, usually in the supine position on a bicycle type ergometer. Normally, the cardiac output will increase by more than 500 ml per minute for each 100 ml increase in minute oxygen consumption. Also, the LVEDP will fall or increase by no more than 2 to 3 mm Hg

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**Chief, Cardiac Catheterization Laboratory, Mount Sinai Hospital of Greater Miami, Miami Beach, Florida

Contributed by the S. C. Heart Association to this Journal.

while the stroke work and stroke volume rise. A failing or abnormal left ventricle will have a significant rise in LVEDP (more than 3 mm Hg), associated with little increase in stroke work and a falling stroke volume.

A common method used in our laboratory to stress the LV is through: 3) *Angiotensin infusion*.

In this test, angiotensin is infused, IV, in doses of 2 to 4 mcg per minute to produce increases in arterial pressure (afterload) in systolic increments of 25 to 30 mm Hg. The normal LV responds to this stress by large increases in stroke work with only small increases in LVEDP. A poorly functioning LV increases its end-diastolic pressure (EDP) markedly, but the stroke work rises slightly or even decreases. This test has proven to be especially valuable in patients with coronary artery disease where it may provide the only indication of decreased LV function.

Muscle function may also be evaluated, qualitatively by: 4) *Angiography*.

The injection of contrast material into the LV is filmed on 16 or 35 mm film and then evaluated in various ways for chamber size and shape, sequence, uniformity, and magnitude of contractions and for associated abnormalities such as mitral valve insufficiency or ventricular aneurysm. Abnormalities in the contraction pattern indicate a disorder of left ventricular function. We have found an excellent correlation between LV function demonstrated in this manner and the angiotensin stress test when the LV cineangiogram denotes abnormal function. The LV cineangiogram may be entirely normal, however, and an abnormality of function may be demonstrated only by some form of LV stress testing.

It is also important to determine the angiographic integrity of the coronary arteries in the preoperative evaluation of a patient with valvular heart disease. Although a patient with severe coronary artery disease may have normal LV func-

tion, more often there is a functional impairment which affects the immediate surgical risk and subsequent long-term results. This is over and above the risk inherent in the valvular surgery itself.

It must be mentioned that although these four routinely used methods are valuable for the determination of left ventricular function, they are only indirect estimates. It is more appropriate to relate the tension or force developed in a muscle to the extent and velocity of muscle shortening. This is done only experimentally today, and necessitates numerous assumptions in patients. Eventually, however, it will be possible to extend these techniques to routine clinical practice.

Clinical experience has now shown that in otherwise comparable patients those with poor myocardial function have the highest operative risk, stormiest post-operative course, and the poorest post-operative function. Several factors may be important to explain post-operative morbidity to patients undergoing valvular replacement. 1) Significant leakage around the rim of the prosthetic valve. 2) Other residual valve lesions. 3) Prosthetic valve gradients. 4) Coronary artery disease. 5) Poor myocardial function. It is necessary to determine, using the previously mentioned diagnostic tests, which of these factors is important, since the first three, and occasionally the fourth are open to direct surgical attack. Unfortunately, in our experience, most of the poor surgical results have been associated with significantly impaired myocardial function. The patients come with evidence of congestive heart failure and since the mechanical factor (valve lesion) has been relieved, it is easier to obtain evidence of the true state of the myocardium. In some however, severe coronary artery disease is contributing to this malfunction, especially in older patients following aortic valve replacement. When isolated myocardial dysfunction is found, only intensive medical therapy can be offered.

X-RAY FILM OF THE MONTH

CHARLES J. GEILFUSS, M.D.*

Department of Radiology, Medical College of S. C.



This lateral skull film of the sella turcica region is of a 19 year old female who had been complaining of generalized headaches and failing vision. Physical examination showed a severe bitemporal visual field defect and ophthalmoscopic evidence of bilateral optic atrophy.

Inspection of the film shows a large blister-like elevation of bone cortex over the tuberculum sellae and planum sphenoidale. Frontal films and tomograms showed the blister to be in the midline.

With this appearance a specific diagnosis of meningioma of the tuberculum sellae or planum sphenoidale can always be made. The blistering is caused by repeated thinning and deposition of bone at the base of the meningioma with up-

ward bulging of the sphenoid sinus or posterior ethmoid air cells beneath the deposited bone. Often changes of meningioma in this area are not this pronounced in the plain film. Only minor changes of hyperostosis or minute blistering may be suspected on plain film. When these changes are suspected visually, or if the symptoms and signs suggest meningioma, frontal and lateral tomograms of the planum and tuberculum should be performed.

In this case the diagnosis was confirmed by bilateral carotid arteriography, which showed a tumor blush fed by meningeal branches of both ophthalmic arteries.

The tumor was partially removed surgically. The benign nature of these tumors, the insidious onset, and progressively more hazardous excision make early radiologic recognition mandatory.

*Assistant Professor of Radiology (Neuroradiology) Medical College of S. C.

President's Page



"NO QUORUM"

There are meetings and more meetings. Local, committee, special, county and state meetings. An attempt to attend all of these meetings is time consuming for the busy physician. During this past year some of us have spent many long and arduous hours in various kinds of meetings—*all important*. However, many of these important meetings are poorly attended by the physicians who have been appointed to various committees because of their special knowledge or interest in the area of the committee's province.

Recently at the meeting of the Regional Advisory Group of the Regional Medical Program in Columbia there were too few physicians present to provide a quorum. Consequently, no progress was made. This group is considering many problems which deeply concern and involve the medical profession from the office practitioner to the hospital complex. It is to be noted that hospital administrators and members of the public were well represented at this meeting. Some of their views, as you know, are not in full accord with those of the medical profession, and many of these people are quite vocal in expressing their opinion.

If we are going to continue to exercise any control over the decisions which are being made, that seriously affect the practice of medicine, we should have full attendance of the appointed physicians at all of these meetings. Otherwise, decisions will be made and programs implemented with which we may be in serious disagreement.

The Comprehensive Health Planning Program which is currently being implemented in South Carolina calls for each committee to have 51% of its membership representing the consumer public in an advisory and voting capacity at all levels—local, county and state. It thus becomes quite evident that physicians should participate more fully in the interest of making these programs truly effective and protecting the free enterprise system. The rush for the federal dollar in most areas is frenzied, and the mature judgment of physicians is needed to help guard against hasty and unwise decisions.

Inasmuch as this is my last letter for the President's Page, may I express my appreciation to the many who have given me their wise counsel and assistance during this past year. I am sure that the in-coming president, Dr. William Perry, a fine and sincere gentleman, will receive the same constructive cooperation.

Joel Wyman, M.D., President

Editorials

Malnutrition in South Carolina As Seen by the Physician

If one believes the accounts in the local and national press, South Carolina wallows in a slough of malnutrition and dietetic difficulties of magnificent proportion. Figures broadcast by enthusiastic but sometimes uninformed sources and statistics based on relatively small numbers and basically inadequate information have allowed the scare-headers to magnify and elaborate a small number of gruesome stories.

Obviously the people who know most about the prevalence of malnutrition and its severity as well as the frequency of extreme conditions related to lack of proper food are the doctors who treat the people who have these troubles. Even assuming that many people with these deficiencies do not get to the doctors, nevertheless the great bulk of them must at some time come under some sort of medical supervision. Revealing information is now available through the efforts of Dr. Julian Price and Dr. E. Conyers O'Bryan Jr. who have distributed and analyzed specific questionnaires to the physicians of the state. To these queries there were 417 replies, a very good return on any questionnaire type of inquiry.

The results are surprisingly pleasing. The general occurrence of malnutrition at all ages was in the neighborhood of one to two per cent, much of it due to other existing disease as much as to type of diet, little to actual lack of food and very little to parasites. The occurrence of the disturbances was very largely in the low income group, the senior citizen group and the group of low education; often all of these characteristics apply. Negroes were affected in a proportion of two to one of white people.

Remembering that this survey covered the state in pretty well all areas, it is sur-

prising to see that there were only 24 cases of scurvy, 6 cases of beri beri and 24 cases of rickets reported. It is somewhat disturbing to find 71 cases of pellagra, a disease which long ago could have been eliminated from our midst. Low supplies of protein, of iron and of calories seem to be the chief deficiencies, but eating habits and just plain ignorance seem to be of the greatest importance. An overwhelming consensus of these 417 doctors indicates that they believe that the remedy is primarily and almost entirely through education in proper dietary.

Doctor Bites Doctors

From out of the smoke and confusion associated with matters in the Beaufort and Jasper area of the state comes an unhappy blow below the belt to the medical profession by one of its own members.

This has nothing to do with the fact or fiction of generally bad conditions as pictured in the press locally and nationally. It arises from one Dr. Robert Coles of Harvard University Health Services who was one of the witnesses of the conditions of "hunger and poverty" in South Carolina. Dr. Coles, bless his heart, appeared before a Senate committee and compared what he saw in South Carolina with what he had previously seen in Mississippi and in that vague territory of Appalachia as well as among migrant farmers and the residents of ghettos of other cities. However accurate and reliable his statements may be in regard to these matters, there seems to be no justification for an underhanded charge that he leveled at the medical profession; namely, that the American doctor is unprepared to treat the diseases he is finding in the American poor.

Another University professor stated that he saw in South Carolina children with evidence of stunted growth, anemia and vitamin deficiency; these, he indicated, are the most important diseases

among the poor. To state that American physicians are not equipped to treat these conditions is a palpable absurdity. These are the things that are treated by the practitioner daily, these are the conditions which can be treated with relatively simple methods and these are the conditions which physicians in South Carolina and elsewhere handle with ability and success whenever they present themselves. The difficulty lies in getting patients with these conditions to come for treatment rather than in any inability of the physician to cure the presenting difficulty.

AMA Annual Convention

That refreshing summer event—the Annual Convention of the American Medical Association—comes slightly later than usual this year. But once again the “AMA Annual” should figure significantly in advance planning of physicians.

The Annual Convention is the largest of the many meetings sponsored annually by the AMA. It covers so much of professional interest, and attracts so many physicians, members of allied health professions, industrial exhibitors, and guests, that only a relatively few cities have ample facilities to accommodate it.

This year's Annual Convention will be in the nation's largest city. Because the dates are July 13 through 17, it might be

well to add that New York also ranks prominently in extent of air conditioning. But the Empire State's weather can be pleasant in July, and New York City also can benefit from any cool ocean breezes.

For the many physicians who take their families to the AMA Annual Convention, the New York City area obviously offers many and varied attractions.

There is no question about the benefits for the physician. Among other things, there is opportunity to ask questions, discuss techniques and developments with experts, and enter into dialogue which no other means of medical communication allows so extensively and instantaneously.

Four general scientific meetings are offered, as well as 23 section programs (with the Section on Special Topics offering six sessions), breakfast roundtables and fire-side conferences.

Additional postgraduate education is available through the exhibits, medical motion pictures and scientific television presentations.

This might be an excellent time—not a moment too soon—to put down those dates (July 13 through 17) on your calendar, talk to the family about going to New York together, and start planning reservations and other details. The American Medical Association's 118th Annual Convention will be here before you know it!

50 YEARS AGO



April 1919

In his presidential address, Dr. J. Adams Hayne mentioned the accomplishment of the establishment of the Bureau of Child Hygiene and also the development of an institution for the care of tuberculosis among the Negroes of the state, heretofore not provided for. An advertisement expounded the virtues of Bulgaris Tablets for auto-intoxication.

LETTER FROM THE EDITOR

Mr. Landon Butler
Assistant to the President
Sea Pines Plantation Company
Hilton Head Island, S. C.

Dear Mr. Butler:

Thank you very much for sending me the report of the testimony of Mr. Fraser before the Senate. I found this very interesting and I have learned something from it. First let me protest that I did not concoct the title "Parasitic Worms Seldom Dangerous." The newspaper has a way of doing this kind of thing. However I admit that my article was aimed at pointing out that the problem of parasites was of far less consequence than that of malnutrition.

There is an old story about the Christian boy who for no apparent reason started to assault his Jewish companion. When asked why he was punishing his friend, he replied "you killed my Lord," to which the Jewish boy replied "yes, but that happened nearly 2,000 years ago." The Christian boy's answer to that was "that is so but I just found out about it." This reminds me a little bit about the general furor over parasites. Far be it for me to say that parasites are not harmful, but I think they are not as harmful as current, sometimes emotional reports indicate. We oldtimers in the practice of medicine have seen worms from time immemorial and we are not impressed with the imminent destruction of our population by the parasitic burden. After all the old saying that "public health is purchasable" might well be paraphrased "privies are purchasable," therein lies the nub of the situation.

The results of your survey are most interesting and I do not for a moment question its accuracy. I agree that you would find pretty much the same results in any area similar to Beaufort County. What has bothered me a little is the emphasis on the presence of *Ascaris* and *Trichuris*. There is no mention, or very little, of the hookworm. A good many years ago South Carolina became very conscious of the prevalence of hookworm and extensive campaigns were conducted to eliminate that parasite. Certainly it is much less prevalent than it used to be but it is still present. Now, if the concern was over the hookworm, I would go along completely with the rather dire threat of extensive trouble. *Ascaris* is not always present in large numbers and may be entirely symptomless. And the disease producing ability of the whipworm is still under question.

I found much interest in your statement on the effects of parasitic infestation, since I have recently been looking for something along that line, without much success. You quote certain undocumented statements that children infested with roundworms lose about four grams of protein per day from a diet containing 35 to 40 grams of protein. In other words, the patient is losing about one-tenth of his protein supply and I am not sure that this is enough to produce real malnutrition unless he is subsisting on a very marginal diet, and perhaps in the patients with whom we are concerned this may well be the case. Demonstrable vitamin A and vitamin C deficiencies are not common and I would like to know a little more about the basic research on which the statement was based that there is a reduction in these vitamins in persons infested with these worms. I would question too if it can be accurately documented that children with nutritional demands have less resistance to "acute stresses and infections." Generally resistance is based on a specific response of the body to the infecting agent rather than to a general state of malnutrition. Furthermore while medical journals and texts may indicate that the parasites common in your area are important causes of infectious diseases, diarrhea and dysentery, I would point out that the first can hardly be proven and the latter two diseases are characteristically seasonal, being diseases of warm weather, and in the case of dysentery being caused by specific organisms. I am afraid I am in accord with the local doctors who find little of the infectious diseases in their patients with *Ascaris* and who state that the presence of worms seldom seems to relate to infectious diseases. A recent survey made among 400 physicians over the state which you may have seen reported in the newspapers, indicates that parasites play a part in only about one per cent of their cases of malnutrition. I am delighted to see that concern has been shown about the problems of Beaufort and Jasper Counties. I would not for a minute detract from your thoughts and activities. I come back to the feeling that the problem of the parasitism has been overemphasized and that its solution is relatively simple, if only enough people can get together to promote educational measures and the improvement of general sanitary matters, especially in the question of disposal of human waste.

Thank you again for sending me the report.

Sincerely,

Joseph I. Waring, M.D.

MINUTES OF COUNCIL

Minutes of a meeting of the Council of the South Carolina Medical Association held at the Medical College of South Carolina, Charleston, South Carolina, on Wednesday, February 19, 1969, at 11:00 a.m.

The meeting was called to order by the Chairman, Dr. J. P. Booker, who asked Dr. Thomas Parker to lead the Council in a word of prayer. After the prayer, a moment of meditation was observed in memory of Dr. Clay W. Evatt, Sr.

Dr. William Klauber was welcomed to the Council.

Minutes of the meeting held January 12, 1969, were approved as written.

Mr. Solomon of the South Carolina Hospital Association was introduced and made a presentation on the long term care program sponsored by Kellogg Foundation. Discussion of the need for such a program in South Carolina followed. After discussion, a motion was made by Dr. Atwill that with respect to Dr. Izard Josey's report, care of the indigent by individual doctor is a preferred method in South Carolina. Motion was seconded by Dr. Perry and unanimously passed.

Dr. Edward Dennis appeared as Chairman of Committee on Abortions. Dr. Dennis passed out information on Senator Rubin's Bill on legislation covering abortions. Dr. Weston moved that the state Medical Association support the Rubin Bill covering legalized abortions. Dr. Atwill seconded the motion and it was unanimously passed.

Dr. W. P. Turner from Greenwood was introduced and presented information on the licensing of Osteopaths and requirements therefor. He explained three new Bills (Nos. 1219, 1220 and 1221) which would add an Osteopath to the State Board of Medical Examiners, give Osteopaths authorization to prescribe all types of drugs and simply re-define Osteopaths. These bills were defeated in 1967. A motion was made by Dr. Perry that a committee of Council be appointed to work with the committee from State Board of Examiners and try to arrive at some solution. Motion was seconded by Dr. Weston and passed.

It was announced that Dr. Norman O. Eaddy of Sumter and Dr. William McCord were made ex officio members of the committee and other members selected are Dr. Joseph Cain, Dr. William Perry and Dr. Harvey Atwill. A meeting will be held between this committee and committee from the State Board of Examiners.

The Chairman, Dr. Booker, reconvened the meeting after lunch. Dr. Cain announced that the committee just appointed before lunch would meet at 12:30 on Sunday. He also stated that he believed the extra manpower, gained by licensing of Osteopaths, could be utilized. Dr. Wyman made a motion for approval of this statement of purpose con-

cerning suggested legislation. Dr. Hope seconded this motion and it was passed.

The Chairman reported that next business was to elect a Councilor from the First District. Four names were presented. Balloting followed and Dr. John Hawk was elected. Mr. Meadors notified Dr. Hawk that he had been elected and invited him to the meeting. Dr. Hawk could not attend.

Dr. Wyman read a letter from the State Nutrition Committee requesting appointment of two members to this Committee. Drs. Julian Price and Frank Wyman were named. The Chairman stated that there being no objections presented, these men are appointed.

Dr. Wyman next presented a letter from Dr. Ross, President of the American Medical Association Student Medical Association regarding membership fees. Discussion followed and a motion was made by Dr. Weston that a small committee be appointed to study the problem of the local Student American Medical Association and the national Student American Medical Association, then make a recommendation to be presented at the next Council meeting. Dr. Cain seconded this motion and it was passed. Committee members appointed: Dr. Thomas Parker, Chairman, Dr. Tucker Weston and Dr. J. I. Waring.

The Chairman requested that Dr. Pope, Secretary, advise Dr. Hawk that he has been elected to finish the unexpired term of Dr. Clay W. Evatt.

Dr. Wyman reviewed points concerning continuing medical education for practicing physicians and suggested that some type of program through the Regional Medical Program might be developed to accomplish this. Discussion followed by Dr. Hope, Dr. Cain, Dr. Klauber and Dr. Atwill. Dr. Cain made a motion that a letter be written to the Education Committee stating that Council is concerned about post-graduate education and ask them to consider the program of continued education and present it to Council at the meeting before the House of Delegates. Dr. Weston seconded the motion. Motion was discussed and unanimously passed.

Members of the Medical Education Committee are: Dr. Thomas Hair, Jr., Chairman, Dr. Harvey Atwill, Dr. William Klauber, Dr. William H. Hunter, Dr. J. P. Booker, Dr. Richard Pollitzer, Dr. Dale Groom.

Dr. Wyman read a letter sent to him by the Office of Economic Opportunity dated January 30, 1969, asking for an answer within 14 days. He answered on February 8, 1969, advising that the letter would be reviewed by this Council. Dr. Cain presented information on Comprehensive Health Care and OEO as related to the Medical College along with the advantages of having this program under the auspices of the Medical College. Dr. Cain made a motion that the Council is glad to have the pro-

gram under the auspices of the Medical College and that the Medical College has invited the local Medical Society to participate in this program. The motion was seconded by Dr. Perry and passed.

Mr. Meadors reported that the South Carolina Bar Association has asked for a joint organization between the South Carolina Bar Association and the South Carolina Medical Association to discuss various phases of relationships, between the two. Dr. Weston moved that the Council appoint a liaison

committee from the South Carolina Medical Association to meet with the South Carolina Bar Association Committee. Dr. Perry moved that the President appoint this committee and Dr. Weston accepted the motion. Motion was passed.

Dr. Booker directed the secretary to send a letter to Dr. McCord, expressing the Council's gratitude for the meeting being held at the Medical College and to pledge anew their support and desire to be of help.

ABBREVIATED MINUTES OF COUNCIL

South Carolina Medical Association
Columbia, South Carolina March 2, 1969

The Council of SCMA met at the Blue Shield Headquarters.

The Chairman, Dr. John P. Booker, called the meeting to order and announced that there were two reports to be made. The first report was made by Dr. Thomas Parker, Chairman of a committee composed of Dr. Parker, Dr. Tucker Weston and Dr. J. I. Waring appointed to study the problems of the local and National SAMA and make recommendations to Council at this meeting.

Dr. Parker reported that after going to the Medical College and discussing SAMA with the students, it was the opinion of the committee that in order to acquaint the students better with the actual functions and purposes of SCMA it would be a good idea to invite at least two students to the entire annual meeting at Myrtle Beach at the expense of SCMA and designate such students as Junior Delegates without a vote. At least one of the students should be invited to address the House of Delegates.

It was also recommended that two students, instead of one, be sent as delegates to the National SAMA meeting at a cost to SCMA not to exceed \$150 each.

Dr. Joseph Cain moved that SCMA send at least two students from the Medical College to the National SAMA convention at a cost not to exceed \$150 each. Motion carried.

Dr. Perry moved that Dr. Waring arrange for two students from the Medical

College to attend the entire SCMA meeting at Myrtle Beach as guests of SCMA and to participate in the proceedings as Junior Delegates without a vote and to request at least one of the students to address the House of Delegates. Motion carried. (Mr. Meadors advised that the students were invited to attend last year's meeting but the invitation was not even acknowledged.)

Dr. Perry then made a motion that Dr. Waring make arrangements to have a maximum of 20 students from the Medical College to attend the meetings at Myrtle Beach on Tuesday, May 13, as guests of SCMA in order to acquaint as many students as possible with the inside activities of the SCMA. Motion carried.

The second report was from Dr. Joseph Cain, reporting for the committee composed of Dr. Cain, Dr. W. L. Perry, Dr. Harvey Atwill, Councilors, and Dr. Norman Eaddy and Dr. William McCord, as ex officio members, to meet with a committee from the State Board of Medical Examiners to reach a solution regarding Bills Nos. 1219, 1220 and 1221 which have been introduced in legislature to give osteopaths full licensure in S. C.

Dr. Cain reported that in view of the factors (1) that AMA has given semi-recognition to the osteopaths, (2) the U. S. Government is now drafting osteopaths for service in the Armed Forces just as they do medical doctors, and that osteopaths serve in all phases of the Fed-

eral Government Medical Services, and (3) the S. C. Legislature is cognizant of these facts and of our wholehearted objections to osteopaths, and it is an untenable situation to many members of General Assembly, your committee felt that some kind of a compromise should be offered in order that SCMA might have a little control over them. There are only five states at the present time which do not give the osteopaths a full license—S. C., N. C., La., Miss. and Arkansas. It was the understanding of the committee that North Carolina will probably give them full licensure this year provided they are examined by the State Board of Medical Examiners. It was the feeling of the committee that there is abundant evidence to justify the conclusion that (1) recent osteopathic graduates complete a course in medicine very similar to that given in our schools so far as hours taken, subjects studied, etc. It would be our responsibility to supply them training and supervision in whatever they might lack in clinical experience; (2) Some of these osteopaths want to come into South Carolina and if they do come it is hoped that they will practice particularly in the rural areas; and (3) Since the S. C. physician-to-population ratio is 48th in the nation, we should offer leadership to correct this situation. If we can establish that the osteopaths are fairly well qualified, and are willing to help upgrade their weaknesses, then we will be doing the state a service.

An open hearing was scheduled by the Municipal, Military and Public Affairs Committee of the House on February 25, 1969, to discuss the osteopathic bills. Your committee requested that the open hearing be postponed and allow them to get with a subcommittee of the House and try to thrash out the problems on a face to face basis, which request was granted. Members of the Board of Medical Examiners were invited to attend this meeting also. Present at the meeting were:

Dr. E. A. Johnson, of Summerville, Chairman of the Osteopathic Board

Dr. Baker, an Osteopath and Radiologist at Fort Jackson

Dr. Bill Turner, of Greenwood, President of the State Board of Medical Examiners

Mr. Nathaniel B. Heyward, Executive Secretary of the State Board of Medical Examiners

Dr. Norman Eaddy, of Sumter

Dr. Joseph Cain, of Mullins

Mr. Jack Meadors, Executive Secretary of SCMA

For three hours, the subject was discussed pro and con. There are three main classes of osteopaths, i.e., a recent graduate (who is dealt with in one way under this compromise); the osteopath who has been in practice for some time in another state who might want to come to S. C. (This group is being dealt with separately;) the third group, of course, is the osteopath already practicing in S. C. (four in number.) These will have to be absorbed.

A compromise has been tentatively reached which the committee feels the members of the Medical Association can live with as follows:

The present Osteopathy Board will be abolished and the Board of Medical Examiners will examine applicants in both medicine and osteopathy. One osteopath will be added to the present medical board to examine in "science & practice of osteopathy."

Osteopathy will be redefined as a "complete system of medicine" (osteopaths will have the same privileges as M.D.'s).

In order to practice in S. C., an osteopath must:

- (a) Have 3 years of pre-professional training in an accredited college;
- (b) Complete 4 years in an Osteopathic College, graduating with a D.O. Degree;
- (c) Following this, he must pass the State Board of Medical Examiners (same examination as M.D.'s);
- (d) After this, he must serve one year internship in a hospital approved

for intern training by the American Medical Association; and

- (e) On completion of this year's internship he will receive a license to practice in this state.

Concerning osteopaths already in practice in another state who want to practice in this state:

1. No reciprocity will be granted without an examination by the State Board of Medical Examiners.
2. To be eligible to take the examination, each applicant will be judged by the Board on an individual basis as to previous training, practice, etc.
3. On successfully passing the examination, he will be granted a temporary license to practice in this State.
4. At the end of one year's satisfactory practice, his temporary license will be replaced by a permanent license at the discretion of the Board.

There are now four osteopaths practicing in South Carolina. These four will be licensed to practice under the new law by virtue of a grandfather clause.

In closing, Dr. Cain stated that the committee feels this is an opportunity for the SCMA to provide real leadership in South Carolina and if SCMA does not offer leadership in this field, the chances are that the law which will probably be passed over our objections will be much less adequate than the proposal presented.

It was the opinion of Mr. N. B. Heyward, Jr., Executive Secretary to the State Board of Medical Examiners, that successful passage of the National Board of Osteopathy could be accepted by the State Board of Medical Examiners in lieu of local examination on practice of os-

teopathy. This would eliminate the necessity of an osteopath on the Board.

Dr. Tanner asked what the alternative would be if SCMA did not accept the proposed compromise. Dr. Cain replied that the chances are that a law will probably be passed over our objections which will be much less adequate.

Dr. Norman Eaddy reported that the osteopathic schools were very similar to our medical schools with the exception of clinical experience.

Dr. Strother Pope stated that it was doubtful if the larger County Societies would accept them as members. It was the opinion of the committee that this would be a matter up to each society—to do as they saw fit.

It was also the feeling of the committee that the osteopaths really want no part of SCMA.

It was the opinion of Dr. Klauber that the osteopaths have made great stride and that if SCMA doesn't take some positive action, legislature is going to do it for them.

It was noted that most osteopaths are medical school rejects for one reason or another.

Dr. Cain felt that approval of Council would be insufficient to see this through and requested that it be presented to the House of Delegates for their approval. Dr. Cain then moved that the proposed compromise be approved by Council. Motion carried.

Dr. Cain then moved that the House of Delegates be called into session and this matter brought to them. Dr. Perry seconded. Motion carried.

It was Dr. Tanner's suggestion that the alternative (Bills 1219, 1220 and 1221) be presented at the same meeting.

D. Strother Pope, M.D., Secretary



New officers of the medical staff of the Greenville Hospital system have assumed their positions for the year, with **Dr. Lawson W. Stoneburner** succeeding **Dr. Charlton P. Armstrong** as president. Vice president is **Dr. E. Arthur Dreskin** and **Dr. T. Robert Wynne**, secretary. **Dr. Kenneth T. Williams** has recently joined **Dr. Vernon Merchant** in Anderson for the practice of general thoracic and vascular surgery. He was graduated from Duke University School of Medicine and served his surgical residencies at the Medical College of Georgia. He practiced medicine in Spartanburg prior to moving to Anderson. **Dr. E. F. Gaynor** of Greenville has accepted a position in the medical department of Pilot Life Insurance Co., Greensboro, N. C.

Dr. William W. Bowen of Hartsville has joined the staff of Byerly Hospital. He is engaged in the general practice of medicine at Hartsville Medical Clinic and is president of Hartsville Convalescent and Nursing Home. **Dr. Forde A. McIver** of Charleston recently spoke to members of the Greenville County Medical Society. **Dr. Hyman K. Addlestone** and **Dr. John J. Kane** of Charleston and **Dr. George W. Brunson** of Columbia were made fellows of the American College of Radiology at the College's annual meeting. **Dr. John M. Fleming** has been appointed to the National Committee on New and Unproven Methods of Treatment of the American Cancer Society. **Dr. S. Ronald Campbell** of

Georgetown and **Dr. E. R. Griffith** of Greer will become fellows of the American College of Obstetricians and Gynecologists at its annual meeting.

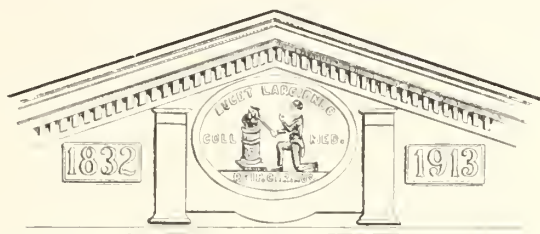
Dr. George W. Fort Jr. of Abbeville was recently promoted to lieutenant colonel in the U. S. Air Force Reserve. **Dr. Stanley C. Baker Jr.** of Greenwood has won the Greenwood Rotary Club's Community Service Award. **Dr. S. Edward Izard** of Charleston and **Dr. L. W. Stoneburner** of Greenville have been elected directors of Blue Cross-Blue Shield Corporation. **Dr. Gustavus H. Klinck**, chief, Endocrine Pathology Branch, recently retired after more than 20 years' service with the Armed Forces Institute of Pathology. **Dr. Klinck** was graduated from the Medical College of South Carolina. He is a diplomate of the American Board of Pathology and Founding Fellow of the College of American Pathologists.

Among the South Carolina doctors who have been selected to serve on the Regional Advisory Group of the S. C. Medical Program are **Drs. S. A. Harris, N. B. Baroody, Charles R. May, Robert Lumpkin, John C. Hawk Jr., Charles Hanna, John P. Coan, David C. Hull, Roland M. Knight, Joel W. Wyman, John B. Martin Jr., William A. Klauber, G. W. Smith, William H. Hunter, John Booker, William L. Mills, Rion M. Rutledge, George C. Adickes, David D. Moise, V. W. Bradham Jr. and G. Preston Cone.**

NEW MEMBERS OF SCMA

Dr. Lois J. Carter, Rock Hill
Dr. Louis Josselin Dodd, Spartanburg
Dr. Robert L. Galphin, Charleston
Dr. Harold C. Morgan, Columbia

Dr. Herbert A. Moskow, Denmark
Dr. Durrand E. Wallar, Greenville
Dr. Bessie Mae Beach, Greenville
Dr. Roland W. Penick, Greenville



Medical College of South Carolina

Dr. Gordon R. Hennigar Jr., chairman of the Department of Pathology, has been invited to serve as a member of the Pathology A Study Section of the National Institutes of Health.

Dr. Peter Gazes, professor of medicine

and chief of cardiology, talked on "Congestive Heart Failure" at the 18th Annual Scientific Sessions of the American College of Cardiology. Dr. Gazes also was guest speaker at the Columbia Medical Society's scientific symposium.

SOUTH CAROLINA EPILEPSY FOUNDATION

An organization is seeking statewide financial and popular support for its work in a major area of public health that has been almost totally neglected until now. This is the S. C. Epilepsy Foundation which is attempting to deal with the many problems involved in epilepsy other than medical.

In November it committed its small resources in a major attempt to break down the public's apathy and ignorance that still prevails about this neurological disorder. It feels that before improvements are accomplished for the unduly restricted victims, a comprehensive program of education and information must prepare the way. For two years the Foundation devoted its efforts in an unsuccessful attempt to establish a Full Diagnostic Clinic, with related services, attached to the Medical College. Though receiving Federal approval the project has been temporarily shelved because of inability to find a qualified neurologist as a full time director. The Full Diagnostic Clinic still remains the Foundation's major objective.

Results are beginning to appear in the effort to awake public conscience to the plight of the epileptic. The state's radio and television stations have effectively aired public announcements on the mat-

ter. In addition the S. C. Outdoor Advertising Council has provided one hundred (100) billboards in the state for the broadcast of the Foundation's message: "Epilepsy—A Public Health Problem We Can't Ignore."

The biggest program undertaken is supplying the 1900 public schools and school districts with complete instruction to teachers on dealing with the incidence of epilepsy when it appears in children. This program has received the endorsement of Dr. Cyril Busbee, state director of education. Much of the educational material is supplied by Epilepsy Foundation of America, based in Washington. In January, through the efforts of President Dr. Joel Wyman, the state Medical Association, granted accreditation and approval of the Foundation's programs. In addition an Advisory Committee was set up to work with the Foundation. The committee: Dr. Rhett Talbert, Medical College; Dr. Frank R. Wrenn, Greenville; Dr. Samuel T. Haddock, Anderson, and Dr. Robert M. Prince, Jr., Columbia.

The Foundation's president is D. W. Green, Jr., attorney of Conway. Dr. C. Capers Smith was executive secretary until his moving to Morganton, N. C. Hospital. His place has been taken by W. G. Bray, Mt. Pleasant. The Foundation's address is P. O. Box 1012, Charleston, S. C.

INTERNS. RESIDENTS. AND CONTINUING MEDICAL EDUCATION

R. S. POLLITZER, M.D.*

In previous articles, we have described the rapid growth of the Graduate Education Program in Spartanburg General Hospital.

The entire Intern, Residency and Graduate Program has received a tremendous stimulus this year with the appointment of Dr. Loren F. Parmley as Director of Medical Education. Dr. Parmley was formerly Chief of Medicine and Chief of Cardiology at Walter Reed General Hospital, Washington, D. C.

Our "visiting professors" have come from all over the Atlantic seaboard.

During the past year they were as follows:

Dr. Norton Spritz, of Rockefeller University, who talked to the House Staff on "Management of Diabetes" and to the County Medical Society on "Disorders of Lipid Metabolism." His visit was sponsored by a \$300 grant from Ayerst Laboratories.

Dr. Gordon R. Hennigar, Professor and Chairman, Department of Pathology, Medical College of South Carolina spoke to the members of the House Staff on "The Role of the Polymorphonuclear Leukocyte in Inflammation" and to the County Medical Society on "Pyelonephritis." His visit was sponsored by Smith-Kline-French Laboratories.

Dr. Roy Roddam, Associate Professor of Medicine, University of Alabama, addressed the House Staff on "Fungus Diseases of the Respiratory System." He

addressed the Spartanburg County Medical Society on, "Management of Diabetes." His visit was sponsored by Pfizer Laboratories.

The following speakers were sponsored by funds jointly contributed by Endo Laboratories, Geigy Pharmaceuticals, Lilly Laboratories, Hoffman-LaRoche Laboratories, Smith, Kline & French Laboratories.

Dr. Ernest Craige, Professor of Medicine and Chief of Cardiology, University of North Carolina School of Medicine, addressed the County Medical Society on "Examination of the Heart by Palpation of the Precordium." He also discussed the technique of Apex Cardiography with members of the professional and technical staff of the hospital.

Dr. Arthur Williams, Chief of the Renal Unit of the Medical College of South Carolina talked to the County Medical Society on "Lymph Dialysis in Relation to Renal Transplant," and to the House Staff on "Renal Hemodialysis Procedures."

Dr. Peter Gazes, Professor of Medicine and Chief of Cardiology at the Medical College of South Carolina conducted a clinical seminar for the House Staff.

It is anticipated that the entire project will continue to grow rapidly during the coming year.

REFERENCES

1. Pollitzer, Richard S., Graduate education and the community hospital, J S Carolina Med Ass. 61:212, July, 1965.
2. Pollitzer, Richard S., Graduate education, Part II, of J S Carolina Med Ass. 62:292, July, 1966.
3. Pollitzer, Richard S., Graduate Education 1967, J S Carolina Med Ass. 64:68, February, 1968.

*Dr. Pollitzer is Chief of Electrocardiography, Spartanburg General Hospital.

SUMMARY OF SERVICES, DIVISION OF HEALTH FACILITIES

PUBLIC LAWS GOVERNING FEDERAL ALLOTMENT OF FUNDS

Division of Health Facilities
S. C. State Board of Health

The Division of Health Facilities has been designated by Legislative Acts of the S. C. Legislature as the organizational element within the State Board of Health to plan for and administer the provisions of the several Public Laws relating to the construction and equipping of medical facilities in the State. These Public Laws are: (1) The Hospital Survey and Construction Act (Public Law 79-725 with subsequent amendments) usually referred to as the Hill-Burton Act (2) The Mental Retardation Facilities and Community Mental Health Centers Construction Act of 1963 (Public Law 88-164, as amended by Public Law 90-31 for Community Mental Health Centers Construction and by Public Law 90-170 for mental retardation facilities construction).

These Acts authorized Federal grants to states, on a matching basis, to defray part of the costs of constructing and equipping public or other non-profit health facilities.

To fulfill a requirement of the Public Laws cited above three (3) State Plans are developed annually by this Division, based upon an inventory and survey of existing facilities, which reflect the need for and proposed location of additional medical facilities:

(1) State Plan for Construction and Modernization of Hospital and Medical Facilities (Hill-Burton Program). In this plan each county is reflected as a Service Area and a priority schedule is established which depicts the relative need for medical facilities within the State. Projects receiving assistance under this program are selected in accordance with requests

for Federal grants by Community or local sponsors based upon established priorities.

(2) State Plan for Community Mental Health Centers (Public Law 90-31). In this Plan the State is divided into fourteen (14) Mental Health Districts and priorities are established through utilization of measurement factors considered indicative of mental health service needs.

(3) State Plan for Construction of Facilities for the Mentally Retarded (Public Law 90-170). In this Plan the State is divided into four (4) Service Areas. Delineation of these Service Areas was made to afford a similar range of demographic and other area factors. Priorities are established within the Service Areas based upon existing facilities and services available.

Federal grants are allotted to the various States on the basis of population, financial standing (3 year average per capita income) and the relative need for medical facilities. In broad perspective, Federal fund allocations are made to encompass construction of (1) hospitals (2) long-term care facilities (3) Community Mental Health Centers (4) diagnostic and treatment centers (5) rehabilitation facilities (6) public health centers (7) nurses homes and (8) mental retardation facilities. Funds for modernization of eligible existing facilities are also available under the Hill-Burton Program. A thirty (30) member Hospital Advisory Council has been appointed by the Governor to advise and consult with this Agency in the administration of all Federal construction fund allocations.

Since inception of the original Hill-Burton Act in 1946 and extending through Fiscal Year 1967, funds in excess of \$74,000,000.00 have been allotted to the State and related to 278 projects.

Consultation is provided applicants prior and subsequent to approval of the projects. Upon final project approval, consummation of plans and specifications, awarding of the construction contract, and the initiation of construction, disbursements are made on a reimbursing installment basis. Concurrent with inspections made by the technical staff an audit of local records is accomplished to ascertain conformity with the pertinent Public Law under which the project was established.

Licensing and certification

All hospitals (except mental) and nursing homes are inspected and licensed on an annual basis; inspections are made more frequently if circumstances require this course of action. Licensure and inspection procedures are governed by the two documents listed below which were developed and promulgated by the State Board of Health with the advice of the Hospital Advisory Council Licensing Committee and the approval of the Executive Committee.

(1) Minimum Standards for Licensing in South Carolina—Hospitals and Institutional General Infirmaries.

(2) Minimum Standards for Licensing in South Carolina—Nursing Care Facilities and Institutional Nursing Infirmaries.

As of January 1, 1968, the following types and number of medical facilities were licensed by this Division:

General Hospitals	88
Specialized Hospitals (Including Chronic)	8
Institutional General Infirmaries	7
Nursing Homes	36
Institutional Nursing Infirmaries	5
Total licensed facilities	194

The respective Conditions of Participation for hospitals and extended care facilities are utilized during the survey and

resurvey processes to determine if facilities qualify or continue to meet the standards established for providers of service, Health Insurance Program (Medicare). These Conditions of Participation were promulgated by the Social Security Administration and establish levels of patient care which must be provided by the facility for certification under the program. Specific time frequencies have been established by Social Security Administration in conducting resurveys:

(1) Hospitals without significant deficiencies upon initial survey are resurveyed within 24 months.

(2) Hospitals with correctable deficiencies upon initial survey are resurveyed within 18 months.

(3) Hospitals meeting the requirements of special certification (limited access) are resurveyed within 12 months.

(4) Nursing homes without significant deficiencies and certified as a provider of extended care facility services are resurveyed at 12 month intervals.

(5) Nursing homes with significant and correctable deficiencies certified as a provider of extended care facility services are resurveyed at 9 month intervals.

(6) Nursing homes receiving certification based upon the "limited access" provisions are resurveyed at 6 month intervals.

To assist in elevating general patient care in all facilities a continuing consultation program has been effected. These consultation visits are made by the same personnel who participate in the licensing and certification programs.

Summary of Facilities Certified as Providers of Service, Health Insurance Program (Medicare) as of April 1, 1968*

Hospitals	69
Extended Care Facilities	51

Technical Services

The technical staff reviews plans and specifications for new facilities as well as alterations and/or additions to existing

*There were no special certification (limited access) facilities participating as of April 1, 1968.

facilities. Consultation is provided to project architects and owners or sponsors from the predesign phase through full development of construction documents. In conducting a review of plans emphasis is placed upon conformity with the Minimum Standards for Licensing, Federal Regulations on Projects funded with Fed-

Ureteral Reconstruction Following Surgical or Traumatic Injury—F. C. Derrick, Jr. (Charleston)
Amer Surg 34:589-596 (Aug) 1968

The author is directing attention to reconstruction of the ureter following injury rather than removal of a kidney, the latter being certainly easy management in many cases compared to attempts at ureteral reconstruction.

Ureteral injuries are not uncommon and occur more frequently during surgery on the pelvic genitativ organs. Estimates of injury vary from 0.5 to 10 per cent of all pelvic surgery but, this varies directly with the extensiveness of the surgery. Blunt trauma with injury to the ureter is extremely uncommon. Missile wounds of the ureter are extremely uncommon and at times difficult to recognize. Irradiation injury to the ureter is likewise most uncommon.

All of the methods of ureteral reconstruction are diagramed and clearly illustrated in the original article. The authors point out the tried and proven technique of making end-to-end uretero-ureterostomies by the oblique cut across the ureter. The rather new technique of transuretero-ureterostomy is diagramed and the author's as well as other experience cited. All of the techniques of using bowel for either ureteral interposition or complete diversion of urine are depicted.

This article is primarily for the interested surgeon or resident who needs a handy reference source in dealing with ureteral injuries.

Traumatic Pancreatitis and Pseudocyst in Childhood

—H. Biemann Othersen, Jr., M.D. (Charleston)
Fred T. Moore, M.D. and E. Thomas Boles, M.D.
Trauma 8:535-546 (July) 1968

From a review of 23 cases of traumatic pancreatitis in childhood seen at the Children's Hospital in Columbus, Ohio, over the last 15 years, the following points may be made: 1) Traumatic pancreatitis in childhood is not rare. 2) The routine and frequent determination of serum amylase levels in patients with blunt abdominal trauma will result in an increased number of diagnoses and treatment for traumatic pancreatitis. 3) Management of the acute episodes of traumatic pancreatitis by nonoperative means has been successful. Considerable effort must be made to rule out associated injuries such as duodenal lacerations, for which operation is man-

eral funds and other building standards and codes as well as on the functional arrangement of the physical plant. Interim inspections are made during the construction phase; a final inspection is made upon completion of the construction program and prior to licensing or occupancy.

datory. 4) Localized injuries to the epigastrium, such as the handlebar injury, usually result in a more localized severe pancreatic injury. These patients should be carefully watched for the development of pseudocyst. 5) External catheter drainage for the traumatic pseudocyst in children has been successful and has resulted in a low morbidity, no mortality and no cyst recurrence. We attribute the success of this mode of therapy to the absence of underlying pancreatic disease and ductal obstruction.

Epidemic Rubella at the Citadel—J. F. Finklea, S. H. Sandifer, and G. T. Moore, Jr. (Charleston)
Amer J Epid 87:367-372 (March) 1968

Epidemic rubella occurred at The Citadel, a military college in South Carolina in the springs of 1964 and 1967. The 1967 epidemic was serologically confirmed. The first epidemic harvested 87 per cent of rubella susceptibles in a cohort exposed to both outbreaks. Rubella susceptibles comprised 20.9 per cent of a class entering college before the national epidemic of 1964 but only 9.7 per cent of classes entering after this epidemic. Among cadets pain on lateral or upward eye movement was the most frequent symptom of the rubella prodrome. Changes in school policy and student body size probably facilitated the development of rubella epidemics. An effective rubella vaccine would be of value to such schools.

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Includes: Waiting room for patients—office space for secretary and records—two private paneled offices—three examining rooms—laboratory space—rest room facilities—free on premises parking.

Choice of sharing with another physician or renting the whole suite.

For information contact
J. Drake Edens, Jr.
905 Arbutus Dr.
Columbia, S. C. 29205
Phone 787-7939

CONGENITAL SYPHILIS STUDY

There is now a specific IgM Antibody Test for neonatal congenital syphilis which will distinguish between the infant whose serological reactivity is due to passive transfer of maternal antibody and the child who has active early congenital syphilis.

Before the test can be fully evaluated and standardized, large numbers of specimens must be tested and correlated with clinical data. The purpose of this article is to bring the test to your attention so that in any suspected cases of neonatal congenital syphilis a serum specimen can be sent to the National Communicable Disease Center Laboratory.

One milliliter of serum from each infant, either venous or cord blood is needed. The specimen can then be sent without any special handling to Mrs. Logan at the Venereal Disease Research Laboratory,

NCDC, Atlanta, Georgia, 30333.

A data sheet should be completed for each specimen submitted. The Venereal Disease Research Laboratory will report to the submitter the results of each specimen tested. However, it will be necessary for the clinician to realize that the significance of any such report at this point is unknown. Therefore, it would be unwise to base treatment of an infant on this result until the test is better evaluated.

The study will continue for a period of about one year, and it is hoped that within that year physicians will secure a specimen of infant's blood for testing whenever they learn of a suspected case of congenital syphilis. Results of such cooperation could shed considerable enlightenment in the total understanding of congenital syphilis.

DATA SHEET

Serum Specimen for Fluorescent IgM Test
Neonatal Congenital Syphilis Project

Name of infant
Age of infant at time of sampling
Maternal serum test at parturition or during pregnancy.....
Maternal syphilis, clinical staging and treatment.....
Physical findings of syphilis in infant and confirmation (darkfeld, etc.)
Any signs of other disease in infant
Specimen submitted by
Address

The above is an example of the data to be submitted with each specimen.

DIVISION OF DISEASE CONTROL, STATE BOARD OF HEALTH

The diagnosis of venereal disease in South Carolina should now be faster and more efficient, according to State Board of Health official.

Technologists from the six area laboratories in the state have received instruction on conducting rapid, new tests for syphilis and gonorrhea. The tests conducted on patients locally will result in earlier diagnosis and treatment for those found to be infected.

The new examinations are a rapid sensitive test for syphilis and an improved culture method for gonorrhea. Under the improved set up, blood samples and cultures will come from county health departments and private physicians directly to the area labs within six hours. All tests were formerly conducted at the lab in Columbia. Area labs from which technicians are being trained are located in Sumter, Anderson, Spartanburg, Greenville, Florence and Charleston.

FAMILY MEDICINE

The new specialty of Family Medicine was officially recognized by organized medicine in February when the Advisory Board of Medical Specialties and the Council on Medical Education of the American Medical Association approved a specialty board in family practice.

Family doctors now in practice will be eligible to take the examination upon showing evidence of having completed a minimum of 300 hours of accredited post-graduate study in medicine. As a practical matter, in most cases this would mean having been a member of the Academy of General Practice for a period of six years.

The bylaws of the new board call for a termination of the "practice-eligible" category in 10 years, so that after that period only graduates of approved family practice residencies will be eligible for certification.

New Pharmaceutical Specialties

by Paul De Haen

For detailed information regarding indications, dosage, contraindications, and adverse reactions, refer to the manufacturer's package insert or brochure.

Single Chemicals—Drugs not previously known, including new salts.

Duplicate Single Products—Drugs marketed by more than one manufacturer.

Combination Products—Drugs consisting of two or more active ingredients.

New Dosage Forms—Of a previously introduced product.

NEW SINGLE CHEMICALS INFLUENZA VACCINE

Biological. Rx

Manufacturer: Merck Sharp & Dohme

Nonproprietary Name: Influenza virus vaccine, monovalent, Hong Kong strain.

Indications: Immunization against the Asian flu.

Contraindications: Hypersensitivity to eggs, chicken, or chicken feathers.

Dosage: Adults and children over 10 years: 1 ml, s.c. Children 6 to 9 years: 0.5 ml, s.c. Children 3 months to 5 years: 0.1-0.2 ml, s.c., on two occasions, one to two weeks apart.

Supplied: Vials—4,000 CCA/10 ml

DUPLICATE SINGLE PRODUCTS EQUGEN

Hormones—Estrogens. Rx

Manufacturer: Paul B. Elder Co.

Nonproprietary Name: Estrogenic Substances. Conjugated Equine.

Indications: Menopausal syndrome, senile vaginitis, kraurosis vulvae, pruritus vulvae, amenorrhea, dysfunctional uterine bleeding, palliative in prostatic carcinoma.

Contraindications: Women with genital malignancies, pre-menopausal women with breast carcinoma.

Dosage: 1 tablet daily.

Supplied: Tablets—1.25 mg; bottles of 20, 100, and 1,000.

INFLUENZA VIRUS VACCINE

Biological. Rx

Manufacturer: Eli Lilly & Co.

Nonproprietary Name: Influenza virus vaccine, monovalent, Hong Kong strain.

Indications: Immunization against the Asian flu.

Contraindications: Acute respiratory disease or other active infection, hypersensitivity to eggs.

Dosage: Adults and children over 10 years: 0.5 ml, s.c. Children 6 to 10 years: 0.25 ml, s.c. Children 3 months to 6 years: 0.05 to 0.1 ml, on two occasions, one to two weeks apart.

Supplied: Vials—2,000 CCA units/2.5 ml.

LEDERCILLIN-VK

Antibiotic—Penicillin. Rx

Manufacturer: Lederle Laboratories

Nonproprietary Name: Penicillin, Potassium Phenoxymethyl.

Indications: Infections caused by penicillin-susceptible organisms, such as streptococci, pneumococci, gonococci, and some strains of staphylococci.

Contraindications: Hypersensitivity to penicillin.

Dosage: Adults and children over 12 years: from 125 mg t.i.d. to 500 mg q. 4h. Children under 12 years: adult dosage adjusted accordingly.

Supplied: Tablets—250 mg; bottles of 100 and 1,000.

TUBERCULIN P.P.D. Solution

Diagnostic—Dermal. Rx

Manufacturer: Panray Division, Ormont Drug & Chemical Co., Inc.

Nonproprietary Name: Tuberculin Purified Protein Derivative, Dilute.

Indications: Intracutaneous testing for tuberculosis.

Contraindications: None mentioned.

Dosage: 0.1 ml intracutaneously.

Supplied: Vials—First strength, 1 ml Intermediate strength, 1 and 5 ml. Second strength, 1 ml

COMBINATION PRODUCTS

ALLYLGESIC w. Ergotamine

Migraine Therapy. Rx

Manufacturer: Paul B. Elder Co.

Composition: Aspirin 150 mg, Acetaminophen 100 mg, Aluminum aspirin 100 mg, Allobarbitol 15 mg, Ergotamine tartrate 1 mg

Indications: Recurrent throbbing vascular headache, migraine, migraine variants, histaminic cephalgia, headache complicated by tension.

Contraindications: Peripheral vascular disease, coronary heart disease, hypertension, impaired renal or hepatic function, sepsis, and pregnancy. Hypersensitivity to any of the components.

Dosage: Adults: 2 caps. at onset of attack, then 1 cap. q. 1-2h., maximum 6 caps. per attack or 10 caps. in 7 days.

Supplied: Capsules—bottles of 20, 100, and 500.

DILOR-G

Bronchial Dilator. Rx

Manufacturer: Savage Laboratories

Composition: Dyphylline 22 mg, Glyceryl guaicolate 200 mg

Indications: Bronchial asthma, emphysema, bronchitis, pneumonitis, and other related bronchopulmonary insufficiency conditions.

Contraindications: Concomitant administration with ephedrine or other sympathomimetic drugs.

Dosage: Adults: 1 tablet 3-4 times daily. Children over 6 years: 2-3 mg. dyphylline per lb. body weight, daily, in divided doses. Children under 6 years: Not recommended.

Supplied: Tablets—bottles of 100 and 1,000.

DEATHS

Dr. Bryan Michaux

Dr. Bryan Michaux, 66, of Dillon, died March 7, 1969 at St. Eugene Hospital.

Dr. Michaux was a son of the late Dr. D. M. Michaux and Mrs. Carrie Raffield Michaux of Dillon and was a graduate of Dillon High School, the College of Charleston and the Medical College of South Carolina. He served as chief of staff of St. Eugene Hospital, president of the Dillon County Medical Association and the Pee Dee Medical Association. He was a member of the Southern Medical Association and the American Medical Association. He was a past president of S.A.L. Surgeons Association and was chief of obstetrics at St. Eugene Hospital for 20 years.

Dr. James Carl Pepper

Dr. James Carl Pepper, 76, of Route 4, Easley, died Feb. 26, 1969. He had practiced medicine in the Easley area for 44 years.

He was educated in Easley High School and Emory University and served in the Medical Corps during World War I. He began his medical practice in 1919 and retired in 1962.

He served as commander of the Three and Twenty Camp, Woodmen of the World, and in various state and national offices of the group. He was a member of the American Legion, the Pickens County Medical Association and the Slabtown Masonic Lodge. He was a member of Mt. Pisgah Baptist Church.

Dr. Thomas Carlyle Hankins

Dr. Thomas Carlyle Hankins of Dillon, 57, died Feb. 18, 1969 following a heart attack.

He served as health officer in Dillon and

Marion counties from 1939 to 1941 before entering the U. S. Army Medical Corps. Holding the rank of major, he was the consultant in infectious diseases attached to European Theater Headquarters.

In 1946 he came to Dillon where he began his medical practice.

A cum laude graduate of the University of South Carolina, president of the senior class and president of Blue Key, Dr. Hankins was university top debater for three years and received many medals of merit.

He graduated from the Medical College of South Carolina in Charleston in 1937 and interned at Baptist Hospital in Winston-Salem, N. C.

He was past president of the Dillon County Medical Society, past chief of staff at St. Eugene Hospital, past president of the Pee Dee Medical Assn. and member of the S. C. Medical Assn. and the American Medical Assn.

Dr. W. B. Ward Sr.

Dr. W. B. Ward Sr., 81, died March 8 at York Hospital.

Dr. Ward was born in Hickory Grove. He was a graduate of Erskine College and Vanderbilt University. He was a veteran of World War I, having served with the 118th Field Hospital.

He moved to Rock Hill in 1920. He later purchased the Fennell Infirmary, and operated it for a number of years.

Dr. Ward became a Fellow of the American College of Surgeons in 1922. He also was a Fellow of the International College of Surgeons and a Diplomate of its Board of Surgeons.

He was a member of the Society of Abdominal Surgeons. He was a member of the American Legion and Elks Club. He was a Mason and Shriner.

Book Reviews



THE TREATMENT OF BURNS

by Curtis P. Artz, M.D., F.A.C.S. and John A. Moncrief, M.D., F.A.C.S.; W. B. Saunders Company, Philadelphia, Pa. 1969. \$14.50

For more than ten years the first edition of this publication has remained the standard reference text in the field of burn treatment. During this period major fundamental advances have been made in several areas. These areas include water and energy expenditure in the burned patient, the nature of burn wound sepsis and the control of burn wound sepsis utilizing various topical chemo-therapeutic agents. These advances alone would justify a second edition of this book.

The book is devoted primarily to practical aspects of burn therapy and as such, is probably the best resume of this material currently available. Presentation of the pathophysiological aspects is minimized but is certainly more than adequate for the purposes of this book. Of particular interest are the chapters on the pathology of burns and the office treatment of burns. This latter chapter should prove very useful to all physicians called upon to treat burns, however minor.

Virtually all topics of major concern in the treatment of burns are covered. Initial fluid replacement, initial local care of the burn wound, complications of burns and their management, metabolic and nutritional responses and nursing care constitute but a few of the 16 chapters. Each chapter is clearly and concisely written and well illustrated. The information imparted is intensely practical and useful.

The vast experience of these two authors, both former Commanders of the U. S. Army Surgical Research (Burn) Unit, in the management of burns qualifies them uniquely to produce a book of this type. Chapters on the pathology of burns, anesthesia for the burned patient and musculoskeletal changes secondary to burns were written by similarly qualified individuals.

In summary, this book is of the caliber we have come to expect from its authors, two individuals responsible for many of the major recent advances in the art and science of caring for the burned patient. It should be a valuable addition to the basic library of all students and practitioners of medicine.

Dabney R. Yarbrough, III, M.D.

INSTRUCTIONS FOR PATIENTS by H. Winter Griffith, M.D. W. B. Saunders, Philadelphia, 1968. 670 pp.

This unique book was written by a physician experienced in the practice of medicine. As stated in his preface, "I wrote this book because most patients do not remember what their doctors tell them." The book is a lengthy 670 pages in loose leaf form for easy removal and replacement. The format was designed so that the physician could remove the appropriate page and reproduce it on an office copying machine for distribution to his patients. For certain frequently occurring conditions, order blanks are provided so that page reprints may be ordered from the publisher. In addition, anatomical sketches of body organs are included to aid in instructing the patient.

Most of the major maladies which affect man have been included and are appropriately indexed. Recognized experts have been called upon by the author to review each section for accuracy. The individual instruction page begins with a general description of the disease process to be treated. The language is written for comprehension by the layman although at times it becomes too technical. The rationale of treatment is then described in simple terms, and instructions regarding medications follow with appropriate blanks so that the physician may substitute treatment of his choice or modify the program as may be appropriate. Finally, certain warning signals are listed which should alert the patient to call his physician.

This collection represents an immense amount of work by the author. The instructions provided are flexible enough to allow individualization of therapy. Other than minor inaccuracies in general information about the disease described, the information is clear and sound. If anything, there is perhaps too much information provided for the patient which may produce anxiety much as results from the lack of adequate instruction by the physician. This is particularly true in the listing of indications to call the doctor. In some sections it would seem as though physician's telephone would ring incessantly.

All in all, this book represents a significant contribution and is worthy of review by the physician in practice. It is not intended to be a substitute for personal instruction of the patient, but rather a supplement for the patient to digest after he has forgotten his doctor's words. With appropriate individualization for each patient, this manual should be an efficient and effective means of assuring that the physician's therapeutic wishes are carried out by the patient.

Louis P. Jervey, M.D.

CLEFT PALATE, by Harold Westlake and David Rutherford. Foundations of Speech Pathology Series, Prentice-Hall, Inc. Englewood Cliffs, N. J. 1966. Pp. 137. Price \$5.95.

CLEFT PALATE AND COMMUNICATION, by D. C. Spriesterbach and Dorothy Sherman [ed]. Academic Press, New York, 1968. Pp. 291. Price \$12.00.

Westlake and Rutherford have produced a clear concise overview of the cleft palate case and his management. The unique 'search items' in this series allows for extended study on a specific topic. The writing is rather laborious to anyone with some

background in the subject.

Cleft Palate and Communication, however, is an interestingly written volume which focuses attention on the long range goals of cleft palate habilitation. It is a review of studies from various disciplines which are involved with these cases—emphasis in management for speech. The reference sources are extensive.

Cleft Palate and Communication is destined to become the outstanding reference source in this interdisciplinary field.

C. Mitchell Carnell, Jr.

The American College of Physicians will present "Internal Medicine: The Good That's Old; The New That's Vital" May 12-16 in Albert Einstein Medical Center in Philadelphia.

For more information write: Dr. E. C. Rosenow Jr., American College of Physicians, 4200 Pine Street, Philadelphia, Pa. 19104.

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and advertised CONTINUOUSLY in the S. C. Journal since January 1920 issue.

11:00 A.M. (SPECIAL ORDER) The Annual Meeting of the Corporation, The Blue Shield Corporation

Election of Directors:

The terms of the following expire this year:

Mr. W. Palmer Dillard	Dr. Samuel G. Lowe, Jr.
Dr. J. Hal Jameson	Mr. Capers L. Peterson
Dr. Louis P. Jervey	Dr. James L. Wells
Dr. A. Izard Josey	

Report of State Board of Medical Examiners

Report of Executive Committee of State Board of Health

Unfinished Business

New Business

3:00 P.M. **Meeting of Reference Committees**

(All members of the Association are invited to appear before the Committees considering matters in which they are interested. Meeting places will be posted and announced.)

TUESDAY, MAY 13

Officers

President-elect
Vice President
Secretary
Treasurer

Delegate to the A.M.A. (2-year term):

The term of Dr. Joseph P. Cain, Jr. expires December 31, 1969.

Alternate Delegate to the A.M.A. (2-year term):

The term of Dr. John C. Hawk, Jr. expires December 31, 1969.

Councilors (3-year terms):

First District—The term of Dr. Clay W. Evatt (Deceased) expires. (Being filled in the interim by Dr. John C. Hawk, Jr.)

Third District—A Councilor will be elected to fill the unexpired term of Dr. Martin M. Teague, Resigned (being filled in the interim by Dr. William A. Klauber).

Fourth District—The term of Dr. John P. Booker expires. (1960)

Seventh District—The term of Dr. Michael Holmes expires. (1966)

Members of Mediation Committee (3-year terms):

First District—The term of Dr. Robert S. Solomon expires. (1968)

Fourth District—The term of Dr. Donald G. Kilgore expires. (1966)

Seventh District—The term of Dr. Marion Davis expires. (1966)

Member of Benevolence Fund Committee (3-year term):

The term of Dr. R. W. LaRoche expires.

Members of State Board of Medical Examiners (4-year terms):

First Congressional District—The term of Dr. A. R. Johnston expires.

Third Congressional District—The term of Dr. Wm. P. Turner expires.

Selection of Place for 1970 Annual Meeting.

Sine Die Adjournment.

The annual meeting of the Advisory Committee to the Crippled Children Society will be held at breakfast at 8 a.m. Wednesday, May 14 at the Ocean Forest Hotel.

SOUTH CAROLINA MEDICAL ASSOCIATION

ANNUAL MEETING — MAY 1969

SCIENTIFIC PROGRAM

TUESDAY, MAY 13, 1969

- 2:15 p.m. Remarks, Joel Wyman, M.D., President
- 2:30 p.m. First Medical College of South Carolina Alumni Association Lecture.
The Transient Hemiplegias
B. M. Montgomery, M.D., Newberry, South Carolina—Class of 1944
- 3:00 p.m. Rehabilitation of patients with musculoskeletal and neurologic disease.
Robert L. Bennett, M.D., Medical Director, Georgia Warm Springs Foundation
Dr. Bennett's lecture sponsored by the South Carolina Chapter of the Arthritis Foundation in memory of E. Walter Masters, M.D. of Columbia, S. C.
- 3:15 p.m. Discussion of first two presentations.
- 3:30 p.m. Symposium on Physical Fitness and Therapeutic Exercise Programs.
Chairman: Loren F. Parmley, Jr., M.D., Director of Medical Education, Spartanburg General Hospital
- 3:30 p.m. The Importance of Exercise Programs for Healthy Persons.
Warren K. Giese, Ph.D., Professor of Physical Education, University of South Carolina
- 4:15 p.m. Detection of Coronary Artery Disease
Loren F. Parmley, Jr., M.D.
- 4:30 p.m. Therapeutic Exercise Programs for Patients with Heart Disease.
Charles Summerall, M.D., Assistant Professor of Medicine, Medical College of South Carolina
- 5:00 p.m. Questions and Answers
- 5:30 p.m. Adjournment.

WEDNESDAY, MAY 14, 1969

- 9:30-12:30 a.m.
Symposium on Trauma, Sponsored by South Carolina Chapter of American College of Surgeons.
- 9:30 a.m. Trauma to the Eye.
Chairman: J. K. Owens, M.D., Bennettsville, South Carolina
Howard Stokes, M.D., Florence, South Carolina
- 10:00 a.m. Trauma to the Nervous System
Daniel Paysinger, M.D., Columbia, South Carolina
- 10:30 a.m. Trauma to the Abdomen
Max Rittenbury, M.D., Associate Professor of Surgery, Medical College of South Carolina
- 11:00 a.m. Trauma to the Thorax
Edward Parker, M.D., Charleston, South Carolina
- 11:30 a.m. Treatment of Shock
Richard Lillehei, M.D., Chairman—Department of Surgery, University of Minnesota

WEDNESDAY AFTERNOON—MAY 14th

- 2:00 p.m. Drug Dependence in Psychosomatic Patients
Roland E. Bieren, M.D., William S. Hall Psychiatric Institute, Columbia, South Carolina
- 2:30 p.m. The Laboratory and Clinical Diagnosis of Ethanol Intoxication
Robert E. Jones, Jr., M.D., Department of Pathology, Anderson Memorial Hospital
- 3:00 p.m. The Medical Basis of Alcoholism
Stanley E. Gitlow, M.D., Associate Clinical Professor of Medicine, New York Medical College
- 3:45 p.m. Alcoholism—The Donwood Foundation Treatment Plan
R. G. Bell, M.D., The Donwood Foundation, Toronto, Canada.
Ancillary Service Available to Physicians in the Treatment of Alcoholism
Mrs. Marty Mann of New York, founder of the National Council on Alcoholism.
-

COMMITTEE ON SCIENTIFIC PROGRAM



Walter Bonner, M.D.
Chairman

Dr. J. K. Owens, Jr.
Dr. B. Owen Ravenel
Dr. Edwin R. Wallace

Dr. John C. Hawk
Dr. James S. Garner, Jr.
Dr. Dana C. Mitchell, Jr.

SPEAKERS ON THE SCIENTIFIC PROGRAM

Richard Carlton Lillehei, M.D.

Dr. Richard Carlton Lillehei was graduated from the University of Minnesota and received his M.D. degree from the University of Minnesota Medical School. In 1960 he obtained the degree of Ph.D. from the University of Minnesota Graduate School.

Dr. Lillehei served his internship at Minneapolis General Hospital and his residency at University of Minnesota Hospitals. He spent his military service at Walter Reed Army Institute of Research, Walter Reed Army Medical Center.

Dr. Lillehei is now professor of surgery at University of Minnesota Hospitals and Diplomate of the Board of Thoracic Surgery.

He is a member of a great many medical organizations, including the American College of Surgeons, American College of Chest Surgeons, American College of Cardiology, and the American Association for Thoracic Surgery.

Jennings K. Owens, M.D.

Dr. Owens is a graduate of Wofford College and the Medical College of South Carolina. He served residency in Surgery at the Medical College of South Carolina and Roper Hospital. He is a Fellow in the American College of Surgeons and a Diplomate of the American Board of Surgery. His practice is confined to general surgery. Dr. Owens practices in Bennettsville, S. C.

Roland E. Bieren, M.D.

Dr. Roland E. Bieren is a board certified gynecologist who during many years of practice in the Washington, D. C. area developed increasing interest in psychiatric problems. He is currently completing the second of three years of training in psychiatry at the William S. Hall Psychiatric Institute. He is Fellow of both the American College of Surgeons and the American College of Obstetricians and Gynecologists. Before he came to South Carolina to study psychiatry he was Associate Clinical Professor of Obstetrics and Gynecology at The George Washington University School of Medicine.

Warren Kenneth Giese, Ph.D.

Warren Giese attended Wisconsin State, University of Oklahoma, Central Michigan University and received his Ed.M. in 1950 from the University of Maryland. In 1965 he received his Ph.D. at Florida State University.

From 1948 to 1956 he was instructor in physical education and assistant football coach at the University of Maryland.

His positions at the University of South Carolina, where he is now head of the department of Health and Physical Education, have included head football coach and athletic director.

He is a member of many professional and allied organizations such as South Carolina representative of President's Council on Physical Fitness, chairman of the South Carolina Recreation Commission, past president of the S. C. Association for Health, Physical Education and Recreation, past chairman of the Fall Sports Section of the American Association for Health, Physical Education and Recreation. He is a member of the American College of Sports Medicine.

Dr. Giese is author of many publications.

B. Daniel Paysinger, M.D.

Dr. Paysinger was graduated from The Citadel in 1953 and the Medical College of South Carolina in 1956. After serving in the U. S. Air Force, Dr. Paysinger was surgical resident at Columbus Hospital. He served his neurosurgical residency at Emory University affiliated hospitals in Atlanta from 1961 to 1965. He is on the staff of Columbia Hospital, S. C. Baptist Hospital and Providence Hospital and is a consultant for the V. A. Hospital and the William S. Hall Psychiatric Institute.

He is a member of many medical organizations and is board certified in Neurological Surgery.

B. M. Montgomery, M.D.

Dr. Montgomery was graduated from The Citadel in 1941 and the Medical College of South Carolina in 1944. He served his internship at Roper Hospital, residency in Pathology at the Medical College of South Carolina and residency in Medicine at James Walker Memorial Hospital and at Roper. Since 1950, Dr. Montgomery has been in the private practice of internal medicine in Newberry.

He is clinical associate professor of medicine at the Medical College of Georgia. He is a diplomate of the American Board of Internal Medicine and a fellow of the American College of Physicians. Dr. Montgomery is a past president and member of the board of directors of the S. C. Heart Association. He is a member of the board of trustees for the Medical College of South Carolina.

He is active in several medical organizations and is author of many publications on internal medicine.

Charles P. Summerall, III, M.D.

Dr. Summerall was graduated from Harvard University and received his M.D. degree, cum laude, from Harvard Medical School. He served his internship and assistant residency in medicine at Massachusetts General Hospital. He was a senior assistant resident in medicine at Duke Hospital, and was a teaching fellow in cardiology at the Medical College Hospital.

Dr. Summerall is now assistant professor of medicine at the Medical College of South Carolina; associate coordinator for Heart Disease and Stroke, S. C. Regional Medical Program; assistant director of the Medical College Heart Clinic. He is Vice president of the S. C. Heart Association and chairman of the association's research committee.

He has held the positions of diplomate of the Subspecialty Board of Cardiovascular Disease and diplomate of the American Board of Internal Medicine. In 1968 Dr. Summerall was a consultant for the Governor's Vocational Rehabilitation Planning Study.

He is author of several scientific publications.

Max Sanford Rittenbury, M.D.

Dr. Rittenbury attended The Citadel and was graduated from the Medical College of Virginia in 1953. He served his internship at the U. S. Naval Hospital, National Naval Medical Center and surgical residency at the Medical College of Virginia.

Dr. Rittenbury is now associate professor of surgery at the Medical College of South Carolina. He is active in many scientific organizations including the American College of Surgeons, the American Assn. for the Advancement of Science, the New York Academy of Sciences and the PanAmerican Medical Assn.

Dr. Rittenbury is author of many scientific publications.

Robert E. Jones, M.D.

Dr. Jones is a native of Franklin, Virginia. He was graduated from Duke University and Bowman Gray School of Medicine. He served his internship in pathology at North Carolina Baptist Hospital and residency in pathology at University of Chicago Hospitals and Brooke Army Hospital. He is pathologist at Anderson Memorial Hospital and Anderson Pathology Associates Laboratory.

Dr. Jones is a member of many medical organizations including the American Society of Clinical Pathologists and the College of American Pathologists. He is author of several publications.

R. Gordon Bell, M.D.

Dr. R. Gordon Bell, president of The Donwood Foundation, Toronto, Ontario, received his M.D. degree from the University of Toronto in 1943. He was engaged in rehabilitation and psychiatric work for the Royal Canadian Army Medical Corps from 1943-1946.

He has been concerned with the treatment of alcoholism and other addictions since 1946 and is special lecturer to the faculty of medicine, University of Toronto and to nurses in training in the Toronto area.

Dr. Bell is a member of the Medical Advisory Board, Alcoholism and Drug Addiction Research Foundation for Ontario; consultant on addictions, Department of Reform Institutions for Ontario; honorary consultant to Salvation Army's Harbor Light Centre, Toronto and to Malvern Institute for Alcoholic and Psychiatric Studies, Malvern, Pa.

Edward F. Parker, M.D.

Dr. Edward Parker, a Charlestonian, was graduated from the University of South Carolina and received his M.D. degree from Duke University. He served his internship in medicine at Strong Memorial Hospital, internship in surgery at Vanderbilt University Hospital and residencies in surgery at Vanderbilt University Hospital and University of Virginia Hospital.

Dr. Parker became instructor in surgery and instructor in clinical surgery at Vanderbilt University. He has been in the department of surgery at the Medical College of South Carolina since 1939 and is now clinical professor of surgery.

Dr. Parker is a member of the S. C. Surgical Association, the Southern Thoracic Surgical Association, S. C. Chapter, American College of Surgeons, was on the board of governors for the American College of Surgeons, a former president of the S. C. Tuberculosis Association and a diplomate of the National Board of Medical Examiners, American Board of Surgery and Board of Thoracic Surgery. He is now chairman of the board of trustees of Roper Hospital, Charleston.

Loren Parmley Jr., M.D.

A native of Texas, Dr. Loren Parmley Jr. was graduated from the University of Virginia Medical School. He served his internship at the Medical College of Virginia and residencies at Brooke General Hospital, University of Wisconsin School of Medicine and Walter Reed General Hospital.

He was chief, General Medical Section No. 1, Walter Reed General Hospital and Assistant Chief, Cardiology Service, Walter Reed General Hospital. He was also Chief, Cardiology Service, Letterman General Hospital; Chief, Department of Medicine, Letterman, and Chief, Department of Medicine, Walter Reed General Hospital. He is now director of medical education at Spartanburg General Hospital.

Dr. Parmley was in a teaching capacity at University of Wisconsin Medical School, University of California Medical School, Georgetown University School of Medicine and is now assistant dean and clinical professor of medicine at the Medical College of South Carolina.

Other appointments have included assistant Army attache, U. S. Embassy, New Delhi; medical consultant and cardiology consultant, U. S. Army Europe; consultant in Internal Medicine to the Surgeon General and Governor of the American College of Cardiology.

Dr. Parmley was a diplomate of the American Board of Internal Medicine and his subspeciality is cardiovascular disease. He is a member of numerous medical societies and author of many scientific papers.

Robert L. Bennett, M.D.

Robert L. Bennett is a graduate of the University of Pittsburgh where he earned the B.Sc. and M.D. degrees. After completion of his internship in 1937 he was appointed a Fellow in Physical Medicine at the Mayo Foundation and in 1940 was awarded the M.Sc. degree by the University of Minnesota.

In 1941 Doctor Bennett accepted the position of Director of Physical Medicine at the Georgia Warm Springs Foundation, a non-profit hospital established by President Franklin D. Roosevelt for the treatment of the after-effects of poliomyelitis. In 1953 he was appointed Medical Director of this same institution.

Doctor Bennett is also the Medical Director of the Georgia Rehabilitation Center, an institution for the evaluation and training of the physically impaired. This center is operated by the State of Georgia and is situated adjacent to the Georgia Warm Springs Foundation hospital.

In 1960 the University of Pittsburgh conferred upon Doctor Bennett the honorary degree of Doctor of Science in recognition of his contributions to the field of Physical Medicine and Rehabilitation. In 1962 he was appointed the Visiting Horowitz Professor at New York University and in 1955 was the recipient of the Gold Key of the American Congress of Physical Medicine and Rehabilitation.

Doctor Bennett is a diplomate and past Chairman of the Board of the American Board of Physical Medicine and Rehabilitation; past President of the American Congress of Physical Medicine and Rehabilitation; member of the Committee on Prosthetics Research and Development, National Academy of Sciences—National Research Council; and was Vice-president of the 2nd International Congress of Physical Medicine in 1957 and Chairman of the Executive Committee of the 3rd International Congress in 1960.

He is a member of the Medical Advisory Committee and Program Consultant of the National Foundation; member, Board of American Registry of Physical Therapists; member, Expert Medical Committee, American Rehabilitation Foundation; Consultant in Physical Medicine to the Surgeon-General, U. S. A., and to the Veterans Administration; Professor of Physical Medicine, Emory University Medical School; member, U. S. Board of Directors of the International Society for Rehabilitation of the Disabled; Vice-chairman, Joint Commission on Undergraduate Education in Physical Medicine and Rehabilitation; member, Task Force for the Statewide Planning Project for Vocational Rehabilitation, State of Georgia; member, Advisory Committee of the Statewide Facility and Workshop Planning Project, Education Division, State of Georgia.

Doctor Bennett has contributed to the writing of text-books in the field of Physical Medicine and Rehabilitation and has published ninety-eight scientific articles.

Stanley Edward Gitlow, M.D.

Dr. S. E. Gitlow was graduated from Columbia College and received his M.D. degree from Long Island College of Medicine. He served his internship at Mount Sinai Hospital and residency in medicine at the U. S. Veterans Administration Hospital, Bronx. Dr. Gitlow has been in the private practice of internal medicine in New York City since 1955. He is a diplomate of the American Board of Internal Medicine.

Dr. Gitlow has held various appointments at Mount Sinai Hospital, Flower-Fifth Avenue Hospital, Metropolitan Hospital and is now assistant physician, department of medicine at Bird Coler Hospital and associate clinical professor of medicine at Mount Sinai School of Medicine.

He is a member of many scientific organizations and has contributed some 120 papers to the literature.

J. Howard Stokes, M.D.

Dr. Howard Stokes is a native of Bamberg County. He received his M.D. degree from the Medical College of South Carolina. He served his internship at Roper Hospital and his residency at Children's Hospital, Birmingham.

Dr. Stokes is a fellow of the American College of Surgeons and a diplomate of the American Academy of Ophthalmology and Otolaryngology. He is an attending ophthalmologist at McLeod Infirmary, Florence, S. C.

Dr. Stokes holds the office of treasurer for the S. C. Medical Association. He is a member of a number of medical organizations.

Lanneau D. Lide, M.D.

Dr. L. D. Lide is a native of Marion. He attended the University of South Carolina and received his M.D. degree from the Medical College of South Carolina. His internship was served at Columbia Hospital.

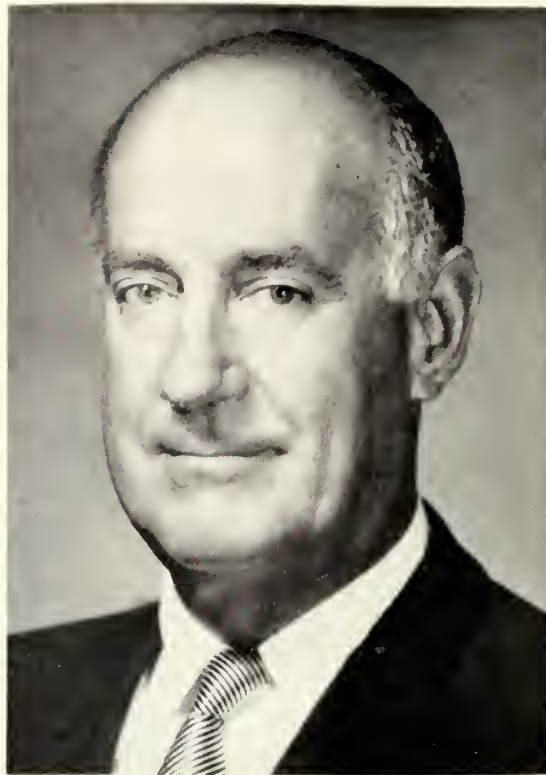
Dr. Lide is a diplomate of the American Academy of Ophthalmology and Otolaryngology. He is in private practice in Florence, S. C. and is an attending ophthalmologist at McLeod Infirmary. Dr. Lide holds membership in a number of medical organizations.



GOV. ROBERT E. McNAIR

BANQUET SPEAKER

Gov. Robert E. McNair, a native of Cades, S. C., was graduated from the University of South Carolina, where he received A.B. and LL.B. degrees. In 1948 Gov. McNair moved to Allendale, where he engaged in the practice of law with the firm McNair & Lawton. He served in World War II in the U. S. Navy. He was a member of the S. C. House of Representatives from Allendale County from 1951 to 1960. He was chairman of the Judiciary Committee, a member of the Judicial Council of S. C., a member of the Legislative Council of S. C.; vice chairman of the Statutory Laws Committee, Development Board Study Committee and Insurance Laws Study Committee. He was elected lieutenant governor in 1962, later becoming governor.



EDWARD R. ANNIS, M.D.

SCALPEL SPEAKER

The name of Dr. Edward R. Annis is familiar to anyone who is conversant with the activities of medicine in the United States. Starting his career as a practitioner in Miami, Fla., Dr. Annis moved into the national scene of medicine and rose to the presidency of the American Medical Association 1963-1964. Since 1967 he has been a trustee of the Association. Dr. Annis' reputation has spread widely abroad and he has been active in many organizations. He is past president of the World Medical Association, past president of the United States Section of the International College of Surgeons, council emissary for the World Medical Association, chairman of the American Professional Practice Association, trustee of the National Association of Residents and Interns, medical consultant for the Home Life Insurance Company of New York, medical consultant for the Certified Medical Representatives Institute of Roanoke, Va., honorary member of the Society of Air Force Clinical Surgeons and of the American Academy of General Practice. He has been active in local civic affairs and has served as director of the Boulevard National Bank in Miami, of the Imperial-American Resources Fund in Denver.

Dr. Annis' honorary awards include five doctorates and are too numerous to list in this account. He has been an outstanding and respected figure in American medicine and has achieved a reputation as an excellent speaker and protagonist.



MRS. PETER C. GAZES, PRESIDENT

FORTY-SIXTH ANNUAL CONVENTION

WOMAN'S AUXILIARY

to the

South Carolina Medical Association

Ocean Forest Hotel

Myrtle Beach

A convention on the go is in store for all members of the Woman's Auxiliary to the South Carolina Medical Association in May. Sure to be exciting, informative, different and full of "flower-power" color, all ladies are urged to attend. Our national president, Mrs. C. C. Long, as well as the president of the Southern Medical Auxiliary, Mrs. Virgil R. Forrester, will be our special guests. Champagne fashions poolside, a la Elza's of Charleston, and an Early Bird Continental Breakfast are some of the added highlights to this colorful convention. Mrs. Peter C. Gazes, president of the auxiliary, will preside. Convention chairmen are Mrs. Charles P. Darby and Mrs. Walton C. Ector. Charleston County Auxiliary will be hostessing the convention.

REGISTRATION:

Monday, May 12, 1969 1:30 P.M. to 5:00 P.M.
Tuesday, May 13, 1969 9:30 A.M. to 12 NOON & 2:00 P.M. to 5:00 P.M.
Wednesday, May 14, 1969 9:00 A.M. to 10:00 A.M.

TICKETS: Pre-registration available

This year we will have available pre-registration by mail for all luncheons, tickets and activities. All tickets, registration badges, etc. will be held at the registration desk.

SCRAP BOOKS & DISPLAYS

These will be displayed in the lobby in the registration area. There will be an award given for the best scrap book according to the size of the auxiliary. The Judges will be:

Joel W. Wyman, President, South Carolina Medical Association

Mrs. C. C. Long, President, Woman's Auxiliary to the American Medical Association

Mrs. William J. Strohecker, Immediate Past President, Woman's Auxiliary to the S. C. Medical Assoc.

SCHEDULE OF EVENTS

Monday, May 12, 1969

12 NOON Finance Committee
Ocean Forest Hotel Dining Room—Mrs. Haskell S. Ellison, Chairman, presiding
2:00 P.M. Student Loan Fund Committee
President's Suite—Mrs. W. P. Turner, Chairman, presiding
3:00 P.M. Health Careers Committee
President's Suite—Mrs. Walter M. Bonner, Chairman, presiding
7:30 P.M. SCALPEL Banquet, Ocean Forest Hotel
Guest Speaker: Edward Annis, M.D., Past President, American Medical Association

Tuesday, May 13, 1969

PAST PRESIDENT'S DAY

10:30 A.M. Executive Board Meeting Dunes Country Club
Mrs. Peter C. Gazes, presiding
12:30 P.M. Open Board Luncheon, Dunes Country Club
Mrs. Peter C. Gazes, presiding
Guest Speakers: Mrs. C. C. Long, President, Woman's Auxiliary to the American Med Assoc.
Mrs. Virgil Ray Forester, President Woman's Auxiliary to the Southern Med. Assoc.
2:00 P.M. Round Table Conference of County Presidents and President's-Elect, Dunes Country Club
Mrs. Davis D. Moise, presiding
4:00 P.M. Champagne Fashions in honor of Past Presidents, Ocean Forest Hotel Terrace
Fashions by Elza's of Charleston
8:00 P.M. Annual Banquet, Ocean Forest Hotel
Joel W. Wyman, M.D., President, South Carolina Medical Association, presiding

Wednesday, May 14, 1969

9:30 A.M. "Early Bird" Breakfast—Plantation Room, Ocean Forest Hotel
10:00 A.M. House of Delegates and General Meeting, Plantation Room, Ocean Forest Hotel
Mrs. Peter C. Gazes, presiding
12:30 P.M. Membership Luncheon, Pine Lakes International Country Club
Mrs. Peter C. Gazes, presiding
Guest Speaker: George H. Orvin, M.D., Assistant Professor, Department of Psychiatry,
Medical College of South Carolina
2:30 P.M. Post Convention Board Meeting, Pine Lakes International Country Club
Mrs. Davis D. Moise, presiding



Joel W. Wyman, M.D.
President

Executive Committee of the State Board of Health 1968

We have tried to take a long, hard, critical look at the health problems and health needs in South Carolina. We realize that the State Board of Health provides only a very small part of the health services to the people of the State, and we have endeavored to work with the physicians, nurses, hospital administrators, nursing homes directors, and many other providers of health services, as well as consumers, in trying to gather information regarding the health needs and health resources in South Carolina. To make better health care and a more healthful environment available to the people of South Carolina is our objective. This is a Herculean task, but we feel that this goal can be reached through comprehensive health planning which involves all the providers of health services if each one views the health needs of the State and thinks as comprehensively as he can about the health services which he provides. We must not only have the cooperation of the physicians, but we must have their leadership in planning to meet community health needs. To tell you how it is, the name of the game is "Planning"! With such change as we are experiencing in the health field being thrust upon us from all sides, it is imperative that all physicians assume their rightful role and give direction to the planning process that will ultimately

REPORTS

OF

COMMITTEES

determine how medical care will be provided in the years ahead.

Governor Robert E. McNair in 1967 designated the State Board of Health as the official state agency for comprehensive health planning (under P. L. 89-749 as amended by P. L. 90-174) and appointed a 25-member Advisory Council composed of the directors of the seven health-related state agencies and the presidents of the S. C. Hospital, Nurses', Pharmaceutical, Dental, and Medical Associations, with a majority of the Council members being "consumers." In order to provide permanency and continuity in the planning function, the S. C. General Assembly in 1968 passed Act No. 1001 which confirmed the governor's action.

This legislation, among other things, provides for the appointment of a consultative Health Forum of not more than 100 persons knowledgeable in the field of providing health services. Virtually every organization in the State which is remotely health-related is represented on the Forum whose members volunteer their services at no cost to the state or federal government. The Forum serves as a two-way communications medium between the State Board of Health (which is the state health planning agency) and individuals and agencies all over the State. Both the Council and the Forum make recommendations to the Executive Committee of the State Board of Health, which in turn makes the decisions.

The State Board of Health contracted with the

Bureau of Governmental Research and Services of the University of South Carolina to conduct a study of patterns of health services in South Carolina. This study was reported in *Health in South Carolina, 1968*, by W. Hardy Wickwar, a copy of which has been sent to each member of this Association. Based on this study the State Board of Health has adopted a system of four regions and thirteen districts for health planning and the delivery of health services in the State.

The two major objectives in comprehensive health planning for the immediate future are (1) to stimulate the formation of areawide health planning councils to perform local comprehensive health planning in each of the thirteen districts, and (2) to initiate a health information system. Comprehensive health planning is a process in which a society decides how much it wants to spend for its "health" and what priorities will be established relative to the expenditures of such monies, e.g., facilities, education, sanitation.

Efforts to organize at the local level have been only partially successful. The Columbia District and the Charleston District each have applications for federal planning funds in the review cycle at the present time. The S. C. Appalachia Health Planning and Policy Council has been recognized as the official health planning body for Greenville, Spartanburg, Cherokee, Pickens, Anderson and Oconee Counties. A federally funded demonstration program known as the Rural Health Project is operating to establish planning councils and systems in the five-county area of Beaufort, Colleton, Jasper, Hampton, and Allendale. Federal funds are available for areawide or community health planning on a 50-50 ratio on individual applications.

The establishment of a competent health information system is vital to successful planning, and such a system will require the cooperation of and data input from all health agencies, both public and private. The data will have to be reported in such a manner that they can be meaningfully correlated with data from all other sources.

The administration of the State Board of Health has sought to keep physicians informed of the ever-changing social patterns that affect or threaten the free enterprise of medical practice and the right of a patient to choose that physician or that clinic from which he would prefer to receive his medical services. Working through its 24 advisory committees, the staff and the Executive Committee of the State Board of Health have tried not only to keep the physicians of South Carolina informed as to the expanding role of the State Board of Health but to seek their advice and consultation in decision-making.

The administration has sought to recruit qualified public health physicians cognizant of the health needs in South Carolina and capable of administer-



C. Tucker Weston, M.D.
Vice President

ing sound public health programs and who also are recognized and respected by the medical and health profession. We have been so fortunate as to recruit Dr. William C. Marett, now chief of the Bureau of Adult Health Services; Dr. Martin Teague and Dr. James B. Watson, staff physicians at the State Park Health Center; Dr. Margaret Neville, director of the Greenwood County Health Department; and Dr. Richard O. Ballew, director of the Lexington County Health Department. Dr. Arthur F. DiSalvo assumed direction of the Bureau of Laboratory Services and Research in August, and returning to their positions after achieving a master of public health degree were Dr. James E. Padgett, assistant chief of the Bureau of Maternal and Child Care and director of the Crippled Children's Division, and Dr. Roland W. Penick, director of the Greenville County Health Department. These fine physicians have much to offer to our program and will add much to the efficiency of the department.

Dr. G. E. McDaniel and Dr. Frank L. Geiger, fine administrators who have rendered a tremendous amount of service to the State Board of Health, retired during the year. Since 1964, beginning with the death of Dr. C. L. Guyton, the State Board of Health has had a complete change-over of medical directors except for Dr. Hilla Sheriff and Dr. R. W. Ball (who plans to retire in 1969).



Strother Pope, M.D., Secretary

This three-year transition has gone very well, and the bureau heads are doing splendid jobs.

The South Carolina Sanatorium was transferred to the State Board of Health as of July 1, 1968, by legislative action, and authorization was given to develop the Sanatorium into a chronic respiratory disease hospital. A Tuberculosis Advisory Committee to advise the Executive Committee has been appointed by the governor as follows. Dr. Edward F. Parker from the S. C. Thoracic Society, Dr. E. Alex Heise from the S. C. Medical Association, Mr. F. A. Dean from the State Department of Public Welfare, Mr. Joseph S. Dusenbury from the State Department of Vocational Rehabilitation, Miss Frances Neel from the S. C. Tuberculosis Association, and Mr. Burnell Sloan, chairman of the Sanatorium Board.

The transfer of the Sanatorium has already led to closer cooperation of hospital and out-patient treatment. Hospital days have been decreased with plans to further decrease to an average of 190 days with the cooperation of better out-patient clinics in the local health departments. A start at least has been made in establishing a computerized tuberculosis register in Aiken County with plans to include Charleston in the near future.

The mobile unit x-ray surveys in the State were terminated as of December 30, 1968, because the incidence of tuberculosis has fallen so that the point of no return has arrived in mass survey of the adult population. The mobile units accounted for 1.3% of the new cases for fiscal year 1968, whereas the health departments accounted for approximately 45%. Personnel from the units are now lending additional technical aid to the county health departments in carrying out their expanding x-ray programs.

In conformance with the recommendations of the Academy of Pediatrics, the Executive Commit-

tee recommended that the smallpox vaccination schedule be modified to read that "children shall be vaccinated or revaccinated during the second year of life, preferably 15-24 months."

South Carolina's immunizations program is one of the most successful of any state in the country, and plans call for enlarging the program by more involvement in the schools. Only one case of poliomyelitis was reported in the State during 1968. The incidence of measles during the year was down to 31 reported cases, which we consider largely due to the mass measles immunization campaign which was begun in 1937 and concluded in 1968 with 153,000 children being immunized. An estimated 60% of one-to-five year olds are immunized against measles and at least 90% of the six-to-twelve year olds.

There were five reported cases of viral encephalitis, six of diphtheria, and six cases of typhoid fever, three of which were in Williamsburg County. There were four reported cases of tetanus with two of the cases resulting in death. Several deaths were attributed to the complications of influenza which occurred as a mild epidemic of 6,187 cases as reported by physicians. Some of the cases proved to be A2-Hong Kong.

In addition to the activities of the 11 state-aid cancer clinics, all approved by the American College of Surgeons, further efforts are being made to insure that all women in the State over age twenty have cervical smears for cytologic screening for cancer. A request for a tri-county project was approved by the S. C. Regional Medical Program, and it was staffed and operating by September, 1968, in Darlington, Florence, and Marlboro Counties under the direction of Dr. Hazel Baker King. Approximately 2% of the 31,000 women between the ages of 20 and 59 in this three-county area were reached by this project during the first three months of operation, and four of those screened were found to have carcinoma of the cervix. This project has been funded for three years.

The eight heart clinics continue to provide diagnostic and follow-up services with the expected addition in early 1969 of the Orangeburg Heart Clinic. Approval has been granted by the S. C. Regional Medical Program for a pilot project co-operative heart clinic program in Florence with the general goal of expanding the role of the community hospital heart clinic and of strengthening its relationship to the general heart program.

Another pilot project co-sponsored with the S. C. Heart Association used the PhonoCardioScan in the screening of a selected group of elementary school children in Aiken County. Further development in the screening of school children for heart murmurs is anticipated in 1969.

The family planning program has been expanded and intensified in every county in the State, serving 20,145 patients in 1968, an increase of 5,159

over the previous year. Screening for cervical cancer by a Papanicolaou smear on all prenatal and family planning patients, with an annual repeat, resulted in 70 biopsies and 112 conizations with hospitalization.

The midwife program has continued to be phased out, with 3.6 active midwives delivering only about 6% of the babies born in South Carolina in 1968 as compared with about 8% in 1967. Since Rho (D) Immune Globulin (Human) is effective in preventing Rh isoimmunization, this preparation has been furnished for Rho-negative mothers when indicated and upon request.

In consultation with private physicians nine cases of phenylketonuria and one suspect case are now being followed with medical, nursing, nutrition, and social consultative services. Funds are available to purchase a special dietary product for these young infants when the family is unable to do so.

The State Board of Health is cooperating with local health departments and other community agencies in a survey and pilot program to improve the total nutrition, including the eradication of parasitic infestation, in Clarendon County. If this pilot program is successful, it will be expanded to other counties which have similar health problems.

Vision screening of school children by volunteers trained by the public health nurses has been greatly extended, with 181,592 children being screened in 1968 as compared to 122,296 in 1967. Those children needing further evaluation were referred to an ophthalmologist.

The Committee on Abortions and Sterilization of the S. C. Medical Association has been giving serious consideration to recommending the changing of South Carolina law to liberalize the legal abortions so as to consider the physical and mental health of the woman. Members of this committee are Doctors Margaret Jenkins, E. J. Dennis, Ramsey Mellette, Alexander Donald, Charles Still, Richard Sosnowski, Charles James, O. B. Mayer, Don Kilgore, Marion Waters, Harold Pettit, Joseph Cain, Henry Laffitte, Hugh Wells, Michael Patton, Strother Pope, and Joel Wyman. Consultants to this committee are Hon. Daniel McLeod, Senator Rembert C. Dennis, Dr. Frank Owens, Hon. Tolbert W. Turner, Mr. M. L. Meadors, Mrs. Ruth Townsend, and Mrs. Josephine Cannon.

The Infant and Child Health Committee of the S. C. Medical Association was asked for its suggestions in regard to implementing the new statutory requirement of the Children's Bureau (from which federal funds come for the crippled children and maternal and child health programs) that an effort shall be made to discover handicapping conditions in young children early. Serving on this committee are Dr. Casper E. Wiggins, chairman, and Doctors William P. Bennett, Kemper D.



J. Howard Stokes, M.D., Treasurer

Lake, Jack W. Rhodes, Robert E. Holman, Girard C. Rippy, Jr., Frank R. Huff, Samuel P. Fleming, Marion Caughman, and Hilla Sheriff. The plan which has been instituted utilizes screening with techniques being taught public health nurses. The children found with abnormalities are referred for medical evaluation to pediatric clinics which are being organized on a district basis. Appropriate referrals are then made for treatment, and those eligible are referred to the crippled children's program for such handicapping conditions as congenital heart defects, rheumatic fever, severe burns, cerebral palsy, cystic fibrosis, birth defects and injuries, diseases of the bones, joints, nerves, and muscles, and most recently, the evaluation and treatment of hearing defects. New patients accepted during fiscal 1968 by the crippled children's program number 1,561, and the total number of patients on the program is 6,394.

Two new dental health programs have been started, one under Appalachian support in Pickens County and the second, in the nature of a study project, supported by the local department of education in Anderson. The Pickens County project includes dental care, education, prevention in a clinic at the county health department and in a mobile dental clinic. Criteria of eligibility have been established by an appointed local advisory council, and those individuals meeting the standards so designated are receiving dental treatment.

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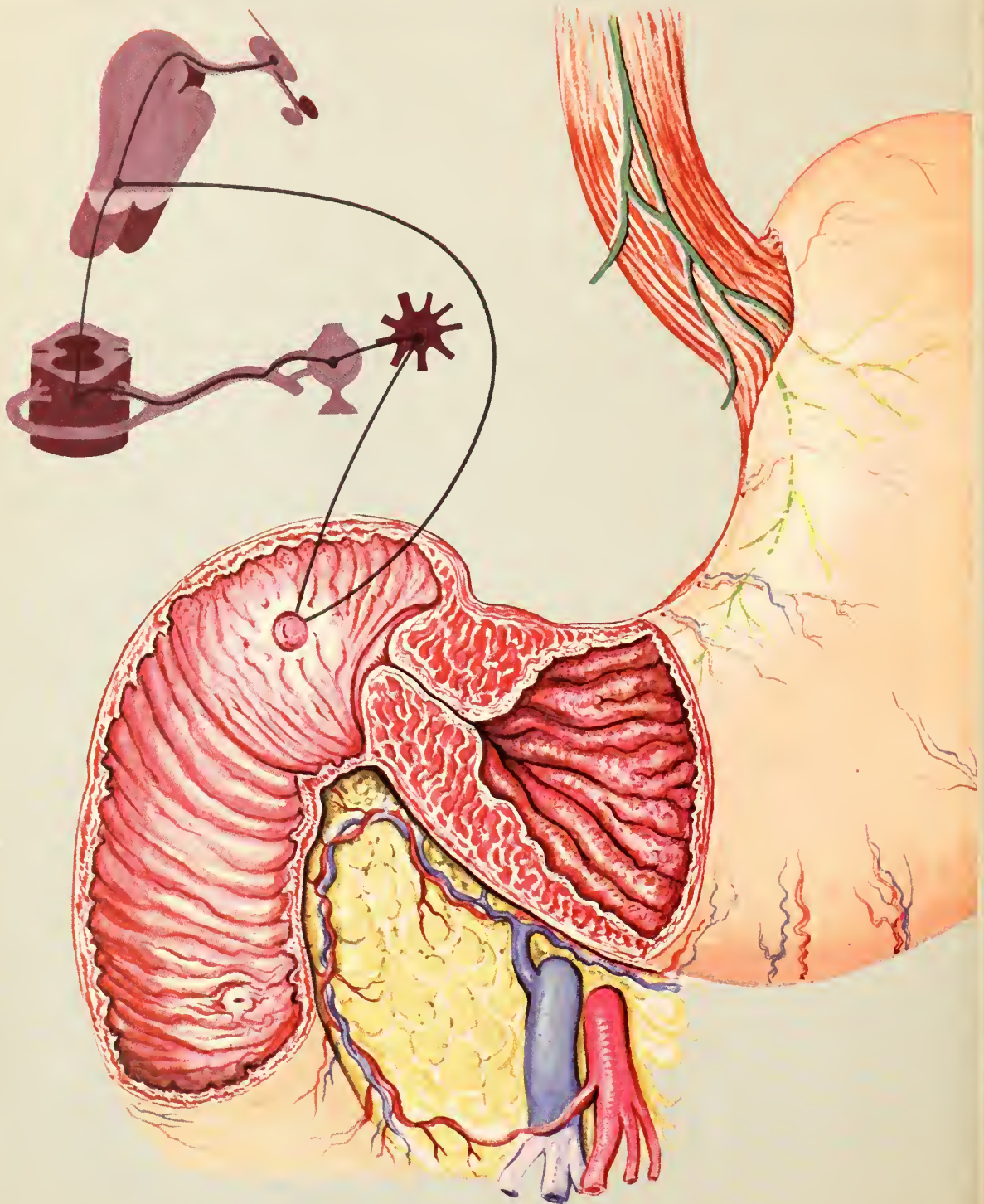
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fects, in order of incidence, are xerostomia, mydriasis, hesitancy of urination and gastric fullness.

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is not a harmless
privilege"**

—Current Therapy 1967, ed. by Conn, H. F., P. 88—

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William L. Perry
President-Elect

Emphasis is being placed upon the younger age groups of patients. The Pickens project has as one of its objectives the study of the feasibility of these methods of providing dental services. Two additional project requests have been submitted, one for Oconee County and the other for Anderson County. The Oconee County one is very similar to the Pickens project, but the Anderson County project envisions the use of a dental-service-type organization acting as the fiscal intermediary for the furnishing of the majority of care by private dental practitioners.

The second new program, located in Anderson, is a study project to determine the effectiveness on dental caries development of a self-applied 9% stannous fluoride paste to the teeth of selected children twice a year. Five hundred children are under study, and the same number are serving as controls. The program is a cooperative effort between the department of education personnel, school nurses, local dentists, and the State Board of Health. If the results of this study indicate an adequate protective against dental caries development, the program will be expanded into other counties.

The Bureau of Medical Care Administration was officially established on July 1, 1968, by combining units which had previously been established to provide consultation, assistance, and supervision in the conduct of health service programs in institutions and communities. Its purpose is to assist

practitioners in the development of a comprehensive range of health services in South Carolina readily accessible to the family physician and his patient. As more and more environmental hazards have been brought under control by primary preventive measures, the quantity and quality of health and medical care available to the people are the chief determinants of the health status of the people to which the State Board of Health can contribute.

A key unit of the new Bureau is the Health Facilities Division which administers programs for determining area priorities and allocating federal aid in the construction and modernization of hospitals, long-term care facilities, public health centers, diagnostic and treatment centers, community mental health centers, and mental retardation buildings. This division also inspects and licenses hospitals and nursing homes according to minimum licensing standards established by the State Board of Health. These standards were revised in 1968.

A new Health Services Division was formed on July 1 to help reach the goal of adequate quality health services for all citizens of South Carolina. To this Division was assigned the Home Health Services Section which was formed in 1966 to assist physicians in the care of homebound patients. Ultimately, we hope to have the services of skilled nurses, physical therapists, speech therapists, occupational therapists, medical social workers, and home health aides available in each county on the prescription of the family doctor to assist on an intermittent basis with the care of homebound patients. The number of patients served more than doubled during the year, and the number of home visits tripled. The unmet needs for home health services are still great.

Another function of the Health Services Division is designed to help improve patient care in nursing homes and hospitals by educational and consultative means, especially in the areas of nursing care and diet management. During 1968 careful thought was given to enlarging this work to arrange for consultation with institutions wishing to provide services under Title XIX (Medical Assistance) of the Social Security Act and for the required evaluation of the utilization and quality of medical and remedial services under Title XIX. The Health Insurance Section, which has been performing similar services under Title XVIII (Health Insurance for the Aged) since 1966, was also assigned to the Health Services Division.

The Narcotic and Drug Control Division is continuing a basic function of the State Board of Health. The staff was augmented during the year and has been kept fully occupied with enforcement of state laws pertaining to narcotics and drugs. It is also providing consultation to providers of health services in the proper handling of narcotics and

drugs and is supervising the handling of drugs within the State Board of Health.

The Division of Occupational Health, at one time a well-funded program, then almost totally abandoned, has been re-established, though at the present time due to lack of funds the only staff member is the bureau chief who must divide his time among several divisions. He now answers limited calls from industry.

The State Board of Health has been quite active in implementing the Atomic Energy and Radiation Control Act of 1967 which gave to this agency the responsibility for regulation and control of ionizing radiation. After much diligent work on the part of the Technical Advisory Radiation Control Council, comprehensive regulations governing the ownership and use of radiation sources have been developed and adopted. Enforcement of these regulations has begun, including the registration of x-ray machines. Members of the Technical Advisory Radiation Control Council are George W. Brunson, M.D., U. H. Bodie, M.D.; Mr. Robert Wilkie; Lyle W. Sherman, D. C.; Henry T. Little, D.D.S.; and W. T. Linton.

The services of Doctors Skottowe B. Fishburne, Maria G. Buse, Karl M. Tornyo, George W. Brunson, U. H. Bodie, John Buse, and William G. Ward have been solicited for the Medical Advisory Committee to the radiological health program. Such a group of physicians well versed in the techniques of radio-medicine who can pass judgment on the wisdom of granting licenses for unusual medical uses of radioisotopes is necessary before the State Board of Health can assume the function of licensing and regulating the use of radioisotopes, which has been the responsibility of the Atomic Energy Commission.

The *Aedes aegypti* eradication program has been terminated due to lack of funds.

Every county in the State has been surveyed in regard to how it disposes of solid waste. Several counties, working with local government officials, have established sanitary landfills, which is the approved method of disposing of solid waste.

As the State cannot continue to prosper with densely populated areas fringed around with overflowing septic tanks, after nine years of study and research by the Bureau of Sanitary Engineering the Executive Committee recommended enforcement of the new rules and regulations governing subdivisions.

In keeping with the changes in laws related to public and semi-public drinking waters, the program of the Laboratory for testing for potability of water has greatly increased during the year. All such supplies are being tested at least once each month for bacteriological quality and once each six months for chemical quality. It appears that this program will result in approximately 30,000 specimens per year.



Thomas Parker, M.D.
Delegate to AMA

Exceptional progress is being made in the food protection program especially in the area of the training of food service workers through an intensive and well-planned educational TV series. A Food and Lodging Advisory Committee, made up of consumers and representatives of the food service and lodging businesses, is being formed to assist the State Board of Health in meeting the expectations of the public with regard to the sanitation of restaurants and public lodgings. The examination of food products for contamination is a new program to protect all consumers.

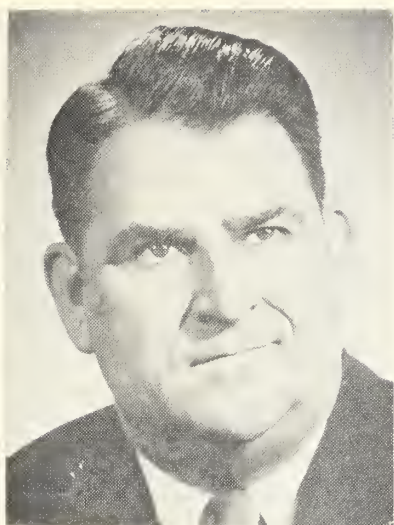
The number of specimens for routine diagnostic procedures examined in the Bureau of Laboratory Services and Research has increased approximately 50% in the last five years, with little increase in personnel. Despite this handicap, there has been progress in instituting new diagnostic procedures which are not readily available anywhere else in the State.

Sensitivity studies of *Mycobacterium tuberculosis* to INH, PAS, and streptomycin have been instituted. Since the South Carolina Sanatorium has joined the State Board of Health, the workload in this area has increased by 45% and sensitivity studies are being expanded to include the secondary anti-tuberculous drugs which are used at that institution.

Increasing numbers of specimens for viral isolations and serological examination are being received. The recent influenza Hong Kong A2 68 epidemic resulted in hundreds of specimens. The rubella antibody titer determination is now available to any physician.

During the year 430 animal heads were examined for rabies. The last rabid animal found in the State was a raccoon from Charleston County in February, 1968. The highly sensitive methods of fluorescent antibody and mouse inoculations are now used in diagnosing this viral disease.

An outbreak of histoplasmosis resulting in four disseminated cases (with one death) and three acute cases was studied. The fungus was isolated



Joseph P. Cain, M.D.
Delegate to AMA

from the deceased patient and the soil where he was working. This mycosis was confirmed in the other patients by serological tests.

The Research Division is participating in a pesticide project with the Medical College of South Carolina. The blood levels of chemical constituents are analyzed in certain controlled populations.

Training programs have been instituted to increase the acuity of laboratory technologists in South Carolina. The Laboratory has offered courses in the diagnosis of intestinal parasites, infectious mononucleosis, and atypical pneumonia (cytoplasm).

Requests by the State Department of Mental Health for the sexual sterilization of eight persons were approved.

W Wyman King, M.D., Chairman

Committee on Legislative Activities

The meeting was held on November 13, 1968 in Columbia, South Carolina. Members present were: Dr. Michael F. Patton of Spartanburg, Dr. D. Strother Pope of Columbia, and Dr. Donald G. Kilgore, Jr., of Greenville, Chairman. Dr. Joel Wyman, President, and Mr. M. L. Meadors, Executive Secretary of the South Carolina Medical Association were present in an ex-officio capacity. Absent were: Dr. H. L. Laffitte of Allendale, Dr. Joseph P. Cain Jr. of Mullins, Dr. Harold S. Pettit of Charleston, and Dr. Hugh H. Wells of Seneca.

The first item of business was a discussion of the possible transfer of Title 19 jurisdiction from the Department of Welfare to the State Board of Health. It was pointed out that much less paper work would be required by this transfer because under the agent used by the Department of Welfare a claim must be filed for each item on the doctor's bill whereas if Blue Cross-Blue Shield were the fiscal agent only one claim per case need be

submitted as is the case for Medicare. Methods for affecting this change were discussed.

Dr. Pope then brought up the desirability of reorganizing that section of the South Carolina Constitution covering the State Board of Health. It was pointed out that this section dates back to 1892 and needs modernization. At present, a committee of the Executive Council is working on this reorganization. The committee agreed to cooperate in any way possible.

Mr. M. L. Meadors reported that the proposed bills on Osteopathy and Podiatry that were presented last year would probably not be presented this year. However, vigilance was to be maintained to make sure that any attempt at activity be examined and action taken.

It was requested that a concerted effort be made to pass a Coroner-Medical Examiner's Law during the next legislative session. The bill submitted in the past year went through the Senate but died in the House Committee. At the direction of the President, the Chairman of this committee will appoint a subcommittee to examine the factors that caused the failure of passage of this bill last year and help put it through the Legislature this year.

Donald G. Kilgore, Jr., M.D., Chairman



John Hawk, M.D.
Alternate Delegate to AMA

Medical Advisory Committee to the South Carolina Vocational Rehabilitation Department

(Subcommittee of the SCMA Committee on
Cooperative Activities)

The Medical Advisory Committee to the Vocational Rehabilitation Department met in Columbia, February 20, 1969.

In addition to the committee members, the Agency was represented to give source information. Department members attending were: Dr. Dill D. Beckman, Director; Mr. J. E. Hammett, Deputy Director; Mr. T. E. Ringer, Jr., Assistant Director in Charge of Administration; Mr. J. S. Dusenbury, Administrative Assistant; Mr. C. J. Collins, Supervisor, Division of Rehabilitation Services; Mr. James McClary, Supervisor, Division of Workshops and

Facilities; Mr. B. J. Marett, Coordinator, Disability Determination Division; and Miss Willie Bush Deason, Medical Secretary.

The chairman, Dr. Ben N. Miller, called on Dr. Beckman to give pertinent recent actions of the Agency.

The Chairman reported on his meeting with Council, SCMA. Certain recommendations from Council regarding the Medical Advisory Committee were presented for action.

1. Council suggested that the Medical Advisory Committee be enlarged to include a generalist. Dr. Peter Gazes discussed this recommendation and moved that a generalist be included in the committee. The committee voted favorably on this motion.

2. Council, SCMA through the Chairman suggested that the Medical Panel of the South Carolina Vocational Rehabilitation Agency be enlarged to include all ethical practitioners of medicine. Dr. Luther C. Martin moved that the committee recommend to the Agency the inclusion of all doctors listed in the Directory of the State Board of Medical Examiners. This motion was accepted favorably by the committee.

The concept of usual and customary fees for physicians' services was discussed by the committee. It was recognized that other state agencies plus major insurance companies had moved into this area. Dr. J. K. Webb moved that Rehabilitation accept the usual and customary fees concept in payments to physicians. The committee voted favorably on Dr. Webb's motion and this is recommended to the Agency.

The present chairman, Dr. Ben N. Miller, was re-elected as Chairman for an additional year.

Ben N. Miller, M.D., Chairman

Committee on Industrial Medicine

The Industrial Fee Schedule which occupied most of the time of this Committee during 1966-67, went into effect on January 1, 1968. As with any fee manual, there were occupational cases that were not covered and needed to be processed individually. The Medical Advisor to the Industrial Commission requested this Committee to recommend an Advisory Committee. This was accomplished by each specialty group in the state electing or appointing a member to the Special Advisory Committee to the Medical Advisor of the South Carolina Industrial Commission.

The Industrial Fee Schedule has in general been met with good will by a majority of the physicians in South Carolina. However, some suggestions and complaints have been made which your Committee has taken under consideration. One, is that the fee schedule as based on the PSI scale is good, but that the base or factor is too low and should be raised. In this situation, your Committee has considered and will recommend to the Industrial Com-



Harrison Peebles, M.D.
Alternate Delegate to AMA

mission that the usual and customary fees be used, similar to that now used by Medicare, Medicaid, and Blue Cross-Blue Shield. In the interim, this Committee plans to meet with the Industrial Commission and recommend Dr. Everette Hughes, Advisor to the Industrial Committee, be allowed to hold workshops with medical secretaries and nurses concerning the proper way to fill out compensation forms to assure the physician the maximum benefits for each industrial injury treated. At this meeting we also plan to recommend to the Industrial Commission the usual and customary fees.

Allen R. Slone, M.D., Chairman

Advisory Committee to Woman's Auxiliary

During the past year members of this committee have been frequently consulted by the Woman's Auxiliary for opinions on various problems. None of these was major and were all solved immediately.

Peter C. Gazes, Chairman

Committee on Infant and Child Health

During the past year this committee has discussed various problems pertaining to Infant and Child Health. At a committee meeting in Columbia particular attention was focused on the following items:

I. Progress made in implementing the statutory requirements of The Social Security Act, as amended Section 505(a) requires each state to have a plan which provides for early identification of handicapping conditions of children, especially in the low income families. In general the plan calls for the establishment of a Pediatric Clinic to be located eventually in each state health district. The purpose of these area Pediatric Clinics is to identify suspected medical problems among the low income group and then, if necessary, to channel them for more specialized care. Already the Public Health Department nurses have received instruction in screening for growth and development retardation as well as well baby care. Attached is a graphic illustration of the suggested plan of operation for this coordinated approach. The committee approved this program and pledged its support. It was made clear that wherever possible private medical care would be used.

II. The PKU screening program was discussed. It was the consensus that mailing "normal" test reports once a month would be satisfactory and would result in a useful postal saving. "Positive" (suspiciously elevated) reports are returned immediately.

III. An outline of current laws pertaining to children in South Carolina was reviewed.

IV. The desirability of arranging for portable incubators to transport problem premature and newborns to centers from the more rural areas was discussed.

Casper E. Wiggins, M.D., Chairman

Committee on Liaison with Allied Professions

This committee had no occasion to meet during the past year.

William Blanton, M.D., Chairman

Public Relations Committee

This committee has carried on a number of varied activities during the year. One was the staging of the annual conference of County Medical Society Officers in Columbia. This year's meeting was attended by some 50 persons. It is felt that this meeting is a valuable one and it is regretted that more members of the Association do not take advantage of hearing discussion of affairs which are very pertinent to all of us. The programs have included discussion of such subjects as Medicare, Title XIX, Blue Cross-blue Shield, commercial insurance and other matters of similar nature.

The committee has furnished to the senior medical students at the Medical College of South Carolina a leaflet detailing the types of insurance available to members of the Association.

The sub-committee on Public Information continues to function. It now supplies a weekly article



J. P. Booker, M.D.
Chairman of Council

to 13 newspapers of the state. Reception of the material has been good. A questionnaire was mailed to the newspapers using the column and 95 per cent responded. All of the newspapers indicated that they wanted the column to continue to be sent. Four of the newspapers, The News and Courier, The Anderson Daily Mail, Union Daily Times and Aiken Standard and Review, use the material weekly. The remaining nine use the column with some less regularity. More than half of the columns used during the year were written by the chairman of this committee, who would welcome more assistance in this endeavor.

The chairman has served on several committees of the South Carolina Hospital Association. He has also worked with Mr. Elliott Taylor of the Greenville General Hospital in the preparation of exhibits of medical interest for the Greenville Health and Science Fair.

Joseph I. Waring, M.D., Chairman

Advisory Committee of the Crippled Children Society

This committee has had no active problems this year but keeps in touch with the activities of the Society. It is recommended that this committee be continued. It meets regularly at the time of the annual meeting of the Association.

Joseph I. Waring, M.D., Chairman

Committee on Historical Medicine

For some years past the only activity of this committee has been in the matter of the production of the first and second volumes of the history of medicine in South Carolina. The second volume covering the span from 1825-1900 appeared in the latter part of 1968 and has been very well received.

Work has begun on production of a third volume of history to cover the period from 1900 to nearly the present time.

The question now arises in my mind as to its practical value. We might as well face the fact that interest in medical history seems to afflict only about one in ten of our South Carolina physicians. Volume

2 of the History of Medicine in South Carolina was purchased by fewer than 150 of our members, even at half retail price. Over 400 copies were sold to others at full price. Sales of this volume and Volume 1 continue, at a rather slow pace, it is true, and the Association still lacks returns of about \$600 to break even on its investment in the two volumes.

The chairman would like to know the wishes of the Association as to continuation of the historical effort and the likelihood of publication. If publication is to be made, it might be wise to set aside annually the sum of \$500 toward costs, as has been done in previous years.

Joseph I. Waring, M.D., Chairman

REPORTS OF THE OTHER COMMITTEES HAD NOT BEEN RECEIVED AT THE TIME THE JOURNAL WENT TO PRESS.

REUNIONS

Ten, twenty-five and thirty year reunions will be held by the Medical College of South Carolina Alumni at Myrtle Beach in May, during the State Medical Association Meeting. The MCSC Alumni Association will also hold their annual luncheon meeting on Tuesday, May 13, at 12:30 p.m. At this time, Dr. J. I. Waring, '21, Curator of the Historical Library, will be honored.

The Class of 1939, organized by Dr. Bachman S. Smith, 77 Rutledge Avenue, Charleston, South Carolina 29401, plans to meet at The Caravelle. Their reunion will include cocktails and dinner on Monday, May 12.

Dr. Robert N. Paulling, Charleston, 1944 Class Agent, reports that their headquarters will be the Pine Lakes Country Club. Reservations may be made directly with the Club or Dr. William S. Chapman, 5111 N. King's Highway, Myrtle Beach, South Carolina 29577.

Reunion activities for the 1944's will include cocktails, dinner and dancing on Monday, May 12, at Pine Lakes. Golf and skeet shooting will also be on the docket during the week.

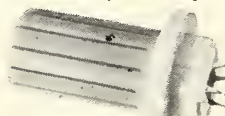
Dr. Bert V. Gue, Orangeburg, and Dr. Charles Darby, Mt. Pleasant, have been working on 10 year reunion plans for the Class of 1959. Their headquarters will be at the Dunes Village and the reunion will begin with registration at 12:00 Noon on Sunday, May 11, followed by an informal cocktail party and get-together at 4:00

p.m. there. On Monday, they will have a golf tournament. Monday evening has been chosen for cocktails and hors d'oeuvres at Pine Lakes Country Club, followed by a dinner-dance.

Other five and ten year classes may also have reunions, but their announcements had not been received at deadline.

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LIVER DAMAGE CAUSED BY EXTRACTS OF "RATTLEBOX" SEEDS (CROTALARIA)

PART I

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Poisonous plants abound in South Carolina.¹

During the year of 1967, farmers and agricultural agencies within the state of South Carolina spent \$500,000 in combating one particularly noxious weed. The weed is known locally as "Rattlebox" and any part of it is poisonous when ingested by either animals or man.² "Rattlebox" is an attractive plant with small yellow flowers and hanging Jack-o-Lantern pods which contain the seeds. Botanically the genus is referred to as *Crotalaria* and it flourishes in many areas of the United State, particularly in the South where the sandy soil of the coastal plains provides an ideal substrate for its proliferation. In the state of South Carolina there are at least five recognized species of the

genus *Crotalaria*, and these occur so extensively that South Carolinians tend to accept the plant as a common pest growing in their yards.

The toxins contained in "Rattlebox" can be lethal to both animals and man. Southern farmers have suffered economic hardship because of the deaths of poultry, horses and dairy cattle which have eaten "Rattlebox." Also, soya bean crops, which represent a major state export (23,535,000 bushels, worth \$30 million dollars were gathered during 1967)³ are rejected by inspecting authorities if the crop shows more than two "Rattlebox" seeds to the one thousand gram sample.⁴ At the present time, "Rattlebox" (or *Crotalaria*) is an urgent cause of concern to both the farmer and to public health authorities. Recently at least one case of human poisoning by "Rattlebox" has been recognized at the Medical College of South Carolina.⁵

Department of Anatomy, Medical College of South Carolina, Charleston, South Carolina.

This study was supported by the U. S. Public Health Service Grants Nos HE-04176, HE-05340 and FR 5420.

Materials and Methods

Seeds of two species of local *Crotalaria* were obtained within the state of South Carolina.* The toxic component of these seeds was extracted by a modification of the chemical process of Adams.⁶ The resulting crystalline product was dissolved in distilled water acidified with hydrochloric acid to a pH of 5.

Male, Wistar rats, weighing between 200-500 Gm were used in these experiments. Over 700 such animals have been utilized up to present time. The majority of the 700 rats were given a single dose of *Crotalaria* extract administered by gastric intubation. Dosage ranged from 100 mg to 1,000 mg of crystalline extract of *Crotalaria* per kg body weight. At all stages, control animals were employed. These control animals received a standard volume of distilled water intragastrically instead of the toxin. In every other respect they were handled in the same way as animals given *Crotalaria* extract. The poisoned animals were usually allowed to die spontaneously, although some were sacrificed at pre-determined intervals. Careful autopsies were performed, and portions of most organs were preserved in 10% formalin for histologic analysis.

Results

Control animals did not die spontaneously, and no pathologic changes were found on sacrificing them. Some animals died spontaneously after receiving the lowest dose (100 mg of *Crotalaria* extract per kg). All rats which were given a single dose of 500 mg per kg, died spontaneously within 48 hours. An individual variation in response to the toxin was noted. At any given level of dosage a small number of animals would survive for a considerably longer period than the majority. No explanation has been found for this observation up to the present time.

*Dr. William Rambo of the Department of Surgery, Medical College of South Carolina, kindly supplied us with seeds of *Crotalaria spectabilis*. Seeds of *Crotalaria striata* were purchased from a commercial agency in Charleston.

Whatever the level of dosage employed, widespread organ pathology was observed at autopsy. Most of the body systems were affected, although there was considerable variation in the distribution and severity of the pathologic changes. In almost all cases, the liver exhibited a marked degree of damage.

Grossly, at autopsy, the liver might be either enlarged or shrunken; the enlarged liver was the most common type. Upon histologic examination, a well-defined centrilobular necrosis of the hepatic cells was always seen. Periportal islands of healthy liver cells accentuated the disrupted appearance of the centrilobular regions. Our usual staining technique, which employed a combination of haematoxylin, eosin and Wrights stain,⁷ high-lighted this general pattern, even when it was minimal.

Liver changes were observed within 24 hours after a single lethal or sublethal dose of *Crotalaria* extract. Congestion of the hepatic vasculature with pooling of blood in the centrilobular areas were striking features at this time. Cryostat sections (in which most of the erythrocytes had been hemolized due to the freezing process) revealed details of the centrilobular parenchymal cells. From these it was apparent that advanced necrosis is present within 24 hours after dosage with *Crotalaria* extract.

Within 24 to 48 hours, the liver substance becomes infiltrated with large numbers of inflammatory round cells. These are extensive in their distribution and often form striking clumps, or foci. The nuclei of the cells constituting these foci frequently exhibit changes. They stain intensely, and fragmentation of the nuclear chromatin material is seen. It can also be observed that the numerous, inflammatory round cells vary greatly in size and shape.

Within three to four days after a single dose of *Crotalaria* extract, large bizarre cells appear within the lumina of the ves-

sels of the hepatic venous outflow. In some places, these cells appear to occlude the vessel totally. The cells have obvious phagocytic properties, for in many areas they are observed to contain granular particulate material such as that characterizing macrophages. The ultimate liver picture is one of chronic cirrhosis, with extensive cellular death, fibrosis, and haphazard bile-duct proliferation.

Discussion

The incidence of liver disease is high in most countries of the world, and the reason for this is largely unknown. As many as 40% of all patients suffering from severe liver damage are diagnosed without any causative factor being revealed.⁸ "Idiopathic liver disease" is one of the major, medical problems of our time.

The World Health Organization has recently drawn attention to the large number of plants which contain poisons harmful to the liver. At least two thousand common plants, which are widely distributed in most areas of the world, contain chemicals which can cause severe liver damage.⁹ The six hundred species of *Crotalaria* are numbered amongst these potentially lethal hepato-toxic weeds.

Since 1954, *Crotalaria* has been recognized as a cause of human death due to liver failure in the West Indies.¹⁰ Leaves of a *Crotalaria* plant are used to make a bush-tea in Jamaica. Recently one case of *Crotalaria* poisoning has been identified at the Medical College of South Carolina.⁵ In the veterinary literature, poisoning of animals by *Crotalaria* was described as long ago as 1884,¹¹ and there have been a large number of confirmatory reports since that time.¹²

The poisonous principles of *Crotalaria* are alkaloids of the pyrrolizidine chemical series. These alkaloids may contaminate fodder, and thus cause the death of domestic animals. Liver toxins of the pyrrolizidine series may occur in at least one human food commodity, namely milk. This

has been confirmed by experimental studies.¹³ Contamination of cow's milk by the potentially lethal pyrrolizidine chemicals must be regarded as a real hazard.¹⁴ Pyrrolizidine can also contaminate grain crops. In 1951, six human fatalities were reported in South Africa due to pyrrolizidine-polluted bread.¹⁵

We have extracted crystalline alkaloid from the seeds of two different species of *Crotalaria* which grow widely in South Carolina. We have administered these extracts of *Crotalaria* to experimental animals, and have substantiated the severe pathologic changes in the liver, and in other organs, which follow. A sequence of degenerative changes has been described for the liver. With some exceptions, our data conforms very well with that of McLean et al¹⁶ and other workers. Our studies add further weight to the thesis that pyrrolizidine alkaloids cause a particular type of liver pathology which has been given the clinical name of "Veno-Occlusive Disease" by Bras et al,¹⁰ although we have not observed the veno-occlusive lesion described by Bras in our experimental animals.

The plant genus *Crotalaria* must now be regarded as a threat to animal and human well-being. From the practical point of view, Clemson University has an active program for the eradication of *Crotalaria* within the state of South Carolina. (I am indebted to the personal communications of H. V. Rogers, Extension Agronomist at Clemson, South Carolina). However, *Crotalaria* represents only a part of the problem. There are at least 1400 other plants containing the hepato-toxic alkaloids, and undoubtedly more will be described.

It is essential, therefore, that these observations should alert the medical community to botanical causes of liver disease in man. The available evidence indicates that the pyrrolizidine alkaloids, contained in numerous botanical sources, rep-

resent a hazard to the well-being of mankind. It is possible that much liver disease is due to the effects of these alkaloids. This information has not attained any degree of notoriety, but the thoughtful doctor would be well advised to give it his attention.

Studies are proceeding to define the exact pathogenetic mechanism of poisoning by pyrrolizidine, and also to evaluate possible therapeutic measures aimed at ameliorating its devastating consequences.

Acknowledgements

The Honorable Mendel Rivers has been most helpful in obtaining essential information concerning the "Crotalaria problem" in the United States. We are sincerely appreciative of his prompt and detailed assistance.

Medical students, Kenneth Warrick and James Fulcher, have contributed to this research.

Finally, without the constant support and encouragement of Professor Melvin Knisely, and the friendly advice of our colleagues in the Department of Anatomy, I doubt that this problem would have been pursued up to its present stage of development.

I am deeply grateful to all these individuals.

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FLURANDRENOLONE (CORDRAN) TAPE AS OCCLUSIVE THERAPY

KATHLEEN RILEY, M.D.*

It has been shown by controlled studies which use vasoconstriction as an index of percutaneous absorption^{1,2} that occlusion increases the penetration of the fluorinated corticosteroids. The increased therapeutic effect of occlusion is produced by the hydration of the stratum corneum³ and the retention of heat in the area.⁴

Flurandrenolone (Cordran) has been incorporated in the adhesive side of a plastic transparent impervious tape (Blenderm) in a concentration of 4 mcg/cm² as a possibly simple, more esthetic and effective technique for occlusive therapy. This has been reported on favorably by Goldman,⁵ Wiener⁶ and Gomez and Schorr.⁷

Method Of Study

The study was conducted in a group of 39 patients selected at random from an ambulatory office practice. No control studies were attempted. The subjects ranged in age from 8 to 77 years and consisted of 23 females and 17 males.

The patients were instructed in the use of the tape, which had a stiff paper liner so that it could be handled and cut to various sizes as needed. It was applied either as a nighttime treatment or as a "twenty-four hours on, twenty-four hours off" regimen. No lesions larger than four inches were treated and no hairy areas

were covered. The tape was to be applied to clean, dry surfaces and smoothed from the center to the edges. The patient was advised to round off the corners of the tape to prevent loosening and separation.

Chart No. 1 shows that the best results were obtained in psoriasis, lichen simplex chronicus, lichen planus and discoid lupus erythematosus.

Clinical Evaluation and Comments

Psoriasis—Of 23 patients, 16 had excellent or good results, six had partial clearing and one no clearing. The six were all patients with the larger lesions who had difficulty keeping the tape in place. The one failure also claimed that he was not able to keep the tape on. Hot weather and exercise caused it to be loosened by sweat and heat.

This group was the most enthusiastic in its use. The tape was comfortable and less conspicuous than other treatments. It was even used in occluding such an irregular surface as the pinna of the ear with excellent results.

Lichen simplex chronicus—In this group of five, all but one had excellent results with clearing of the lesions. In the one failure, hot weather prevented the tape from adhering to an ankle lesion. The occlusion factor has an added therapeutic value in this disease in that it prevents scratching of the area.

Lichen planus—Both patients who had only arm and leg lesions had good clearing. They liked the cosmetic inconspicuousness of the tape and the convenience of quick application.

*Clinical Professor of Dermatology, The Medical College of South Carolina, Charleston, South Carolina.

**Flurandrenolone tape furnished by E. Linn Jones, M.D., Medical Research Division, Eli Lilly Research Laboratories, Indianapolis, Indiana.

Chart No. 1

CASES TREATED WITH FLURANDRENOLONE
(CORDRAN) TAPE

Diseases	Number of Cases	Excellent	Good	Partially Improved	Not Improved	Side Effects
Psoriasis	23	7	9	6	1	—
Lichen simplex chronicus	5	4	—	—	1	—
Lichen planus	2	—	2	—	—	—
Discoid lupus erythematosus	6	4	—	—	2	1
Atopic dermatitis	3	1	1	1	—	—

Discoid lupus erythematosus—Of the six patients, two showed no improvement; they found the tape uncomfortable and would not use it. One of these claimed that it caused irritation, but signs of irritation were not visible. Four other patients showed excellent improvement and were very enthusiastic; they liked its comfort and inconspicuous appearance, plus the fact that it protected them from the sun as shown by less tanning under the covered area.

Atopic dermatitis—Three patients were treated, all having lesions other than the sites treated. Only hand lesions were treated with the tape. These were small, dry areas. One had excellent, one good, and one partial improvement. The lesions taped improved more than did those in other areas which were treated with corticosteroid creams and without occlusion. The tape was difficult to keep on in hot climate and in doing "wet" housework. This was the main disadvantage in its use.

Comments

Out of the 39 patients, all but 4 had

some improvement and 28 had good to excellent improvement.

All the patients but two liked the tape for its convenient and easy application, inconspicuous appearance, better adherence to the skin. Only one patient claimed irritation and this was mild. Two patients did not like the feel of the tape and would not use it. Side effects were minimal. This was due in part to the small areas treated and care in application by patients.

Summary

1. Flurandrenolone (Cordran) incorporated into the adhesive side of plastic transparent tape (Blenderm) in a concentration 4 mcg/cm² has been tried in a group of patients with skin diseases in which occlusive corticosteroid therapy has been effective.

2. Out of a group of 39 patients, 28 had good to excellent results and 7 had partial improvement.

3. Side effects were minimal with only mild irritation in one patient.

4 Cordran tape is a worthwhile addition to the technique of occlusive corticosteroid therapy.

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USE OF FLURANDRENOLONE TAPE IN LUPUS ERYTHEMATOSUS AND OTHER DISEASES

HARRY BOATWRIGHT, M.D.

Columbia, S. C.

As a member of a cooperative study group the opportunity has presented itself to observe and study a variety of skin disorders with their responses to a new method of applying a topical steroid. This has been developed to provide four micrograms per square centimeter of flurandrenolone in the "tacky" side of polyethylene tape. In my experience because of the incidence of patients treated, special attention developed for those with discoid lupus erythematosus. A similar approach was made toward lichen planus, but the case material was not present in suitable numbers sufficiently localized to make the steroid tape the primary treatment.

The lesions of approximately one-third of patients with discoid lupus erythematosus are aggravated or precipitated by sunlight.¹ Conclusions have yet to be reached concerning the photobiology of the disease.

Baer and Haber² favor the hypothesis that the disease features a Koebner-like phenomenon which has commonly been associated with psoriasis and lichen planus. Not only sunlight but other trauma—mechanical, chemical or thermal—has been correlated with the lupus erythematosus disorder. It is suggested that the patient has a defect in being unable to fully repair tissue damage. It is a conjecture whether or not this involves damage to the desoxyribonucleic acids or through disturbance to the lysosome enzyme or still other mechanisms yet to be defined.

Recent work by Pohle and Tuffanelli³ indicates a relative specificity of the immunofluorescent technique in distinguishing lupus erythematosus from other disease states. This is said to reveal bound immunoglobulins and complement at the dermal-epidermal junction. It is of interest that this effect was found in the normal appearing skin with systemic lupus erythematosus. The treatment of cases herein reported are exclusively of the discoid type. It seems likely that protection from trauma as well as the possibility of influencing the lesions by the steroid contained are significant factors in the benefits derived.

Whereas the cases recorded reflect composite results, the beneficial effects of the steroid tape on the disorder were uniformly good in seven patients with discoid lupus erythematosus followed by this observer. Folliculitis was not observed, and its absence may reflect the decrease in sebaceous gland activity due to the scarring in the lesions. Sensitivity appeared to be more mechanical than chemical by those reporting. This takes place usually on normal skin adjacent to the lesion. Flexibility differential of underlying surface as well as moisture and movement may contribute to this phenomenon. It also points to the technique of closely trimming the tape to fit the lesions to prevent significant overhang. The excessive moisture and subsequently excessive drying which occur regularly at almost any area treated can be mitigated by decreasing the daily time of application

Table I
CORDRAN TAPE
EFFECTIVENESS OF CT PREPARATIONS BY DIAGNOSIS
CORDRAN TAPE 4 MCG.

Diagnosis	Total	Excellent	Good	Partially Improved	Not Improved	Worse	Not Stated
Lichen planus	124	52	35	20	14	3	
Lupus erythematosus	137	48	49	17	16	5	2

CORDRAN TAPE
ADVERSE REACTIONS OF CT PREPARATIONS BY DIAGNOSIS
CORDRAN TAPE 4 MCG.

Diagnosis	Total	Burning or Irritation	Sensitivity	Folliculitis	Other
Lichen planus	26	13	2	4	7
Lupus erythematosus	23	15	2	0	11

and applying emollient creams when the lesion is not taped.

Lichen planus in table I reflects the same approximate percentage of improvement as lupus erythematosus, but the cooperative study group had better luck than the writer. Only one of three was unequivocally helped. This was an instance of the hypertrophic type with lesions distributed mostly over the extremities. Maceration and debridement were especially helpful on the lower extremities and applications were kept in place for 72 hour intervals. Folliculitis was seen but not severe enough to require other than a short period of avoidance. The two patients not helped had lesions extensive in distribution and many lesions on the hips

and buttocks. Environmental factors were also adverse—one patient was in a nursing home and the other changing residence with a retiring spouse. Some members of the cooperative group indicated that treatment for at least two weeks was necessary to yield sustained benefit with tape treatment. In the column "other reaction" of table I there was at times difficulty in keeping the tape in place, especially over large joints.

Table II is an earlier compilation of observations with mostly chronic itching disorders. It is obvious that tape can be of great value here in protecting the patient from himself. On the other hand, in some instances of metal sensitivity (e.g. garters and snaps) both the protection

Table II
CORDRAN TAPE
EFFECTIVENESS OF CT PREPARATIONS BY DIAGNOSIS
CORDRAN TAPE 4 MCG.

Diagnosis	Total	Excellent	Good	Partially Improved	Not Improved	Worse	Not Stated
Atopic dermatitis	149	45	37	42	16	7	2
Lichen simplex	308	152	95	33	20	6	2
Contact dermatitis	113	55	38	11	8		1
Neurodermatitis, unclassified	84	34	23	13	10	3	1

ADVERSE REACTIONS WITH CORDRAN TAPE

Diagnosis	Total	Burning or Irritation	Sensitivity	Folliculitis	Other
Atopic dermatitis	52	24	5	10	12
Lichen simplex	78	25	5	31	15
Contact dermatitis	14	7	2	3	2
Neurodermatitis, unclassified	17	8		5	3

and debriding of the affected site contributed to an earlier resolution of the problem. In most of the other categories it was left up to the patient to keep the tape in place and to exercise individual judgment as to optimal periods of maintaining application. A small amount of weeping would sometimes be helped by the application for a few hours, but definitely worsened if maintained for a 24 hour period. In a few others the itching sensation seemed to be intensified by tape occlusion, but this was relatively rare.

In further analysis of the adverse reactions in this group the "window frame" effect description developed. The tape used is three inches wide and is bisected by scoring and is peeled away from non-adhering paper. This encourages squarish and rectangular cuts and fitting of lesions. Evidently patients who itch derive some relief from scratching and rubbing near the edges of the applied tape. At times this gave a peculiar artificial framing of the lesions which extended under

the tape as mentioned above in the discussion of table I.

Besides the tabulated data, the very gratifying benefit in three patients with erythema nodosum is worth mentioning. Two of these were pregnant; all had leg lesions which were painful and relieved in the first 24 hours from discomfort. Involution of lesions required slightly longer than a week. Another isolated patient with zosteriform neuralgia experienced dramatic pain relief but continued to have recurrences, as many in the older age group do.

Summary

Both personal and collective experience have been reported concerning the use of polyethylene tape which contains a topical steroid on the "tacky" side in the amount of 4 mcg per square centimeter. In skin lesions that are localize, free of hair, excessive movement, and moisture it offers advantages both in simplicity and efficiency of attaining local steroid effect.

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INDICATIONS FOR CARDIAC PACING IN ACUTE MYOCARDIAL INFARCTION

PHILIP SAMET, M.D.

Congestive heart failure, shock and cardiac arrhythmias with rapid or slow ventricular rates are three complications of acute myocardial infarction resulting in increased mortality. The purpose of this report is to outline the role of cardiac pacing in the treatment of some of these abnormal rhythms.

Sinus bradycardia occurs in 11 to 14 per cent of patients with acute myocardial infarction. First and second degree atrioventricular block have been observed in 12 to 23 per cent, and third degree or complete atrioventricular block in 2 to 8 per cent of patients with acute infarction. Complete heart block was associated with a mortality rate of 58 to 100 per cent prior to the era of pervenous cardiac pacing. The lesser degrees of atrioventricular block are potential warnings of complete heart block and carry a high risk of ventricular standstill, ventricular tachycardia and ventricular fibrillation. Sinus bradycardia is probably also associated with ventricular asystole and the varied grades of atrioventricular block.

Since the initial report on the use of the pervenous temporary catheter electrode for the treatment of slow ventricular rates caused by complete heart block complicating acute myocardial infarction, a number of observers have employed catheter pacing under similar circumstances, in preference to drug therapy with Isuprel or atropine. It must be stressed that spontaneous reversion to normal sinus rhythm

occurs in the majority of patients with complete heart block complicating acute myocardial infarction. For this reason the recent development of the standby or demand pacing mode is of great practical importance. In this mode of pacing, an effective pacing stimulus results only when a QRS complex is absent for a pre-set, predetermined interval. For example, if the demand interval is set at 60 beats/min., a pacer stimulus results if a QRS complex is absent for more than 1 second; if the demand interval is set at 30, a stimulus results if the QRS complex is absent for more than two seconds; if the demand interval is set at 120 per minute, a stimulus results if the QRS complex is absent for more than 0.5 sec. Competitive stimulation between the pacer stimuli and the patient's own QRS complex is thus avoided, reducing or abolishing the possibility of repetitive ventricular rhythms (ventricular tachycardia or fibrillation) if a pacer stimulus happens to fall on the apex of a T wave during the so-called vulnerable period. The latter may readily occur if fixed rate pacers are employed with transient complete heart block. The demand pacer impulse is generally set at 2-3 times the threshold level to minimize further the possibility of repetitive ventricular firing. Demand pacers are now readily available from a number of companies. External pacing plays little part today in the therapy of complete heart block with or without the complication of acute myocardial infarction.

The technique of temporary catheter passage deserves comment. A variety of veins may be employed to afford catheter passage—the cephalic or basilic veins,

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Contributed by the South Carolina Heart Association to this Journal.

the subclavian, saphenous or external jugular veins. Since the latter vessel is often utilized for permanent catheter passage, we prefer to use the median basilic veins for temporary percutaneous pacing. Catheter displacement within the right ventricular chamber is not a significant problem when arm veins are employed. We usually do not employ the blind method of passage of electrode catheters. An image amplifier fluoroscope located in the cardiac catheterization laboratory is used if the patient can be moved. If the patient cannot be moved, "blind" passage with a bipolar catheter has been attempted in the past, using the tip of the catheter as an exploring intracavity lead to check position; the latter approach is successful in 75 per cent of patients in experienced hands. A portable image amplifier is now available for bedside use and obviates the necessity for blind passage in patients who cannot be moved to the catheterization laboratory. We have utilized only bipolar catheters with the tip placed either in the right ventricular outflow tract or the right ventricular apex. The thin platinum-tipped wires recently recommended by some cardiologists are not employed because of difficulty in blind passage and the danger of knot formation. On rare occasions, in emergency situations, a transthoracic wire may be utilized to permit rapid ventricular capture by direct left ventricular needle puncture and passage of the pacing wire through the needle into the left ventricle.

The above discussion refers primarily to cardiac pacing in complete heart block. A few clinicians advocate initial therapy with atropine or Isuprel for second degree atrioventricular block; if these fail, cardiac pacing is utilized. We utilize initial pacer therapy as do most cardiologists. To avoid competitive rhythm, demand standby pacing is again the treatment of choice. Fixed rate pacers are especially contraindicated under these circumstances because of the danger of repetitive

ventricular rhythms with ventricular fibrillation. On the other hand, first degree atrioventricular block per se (without any other arrhythmia) is not treated by cardiac pacing but is continuously, carefully monitored.

Sinus bradycardia often requires pacer therapy. If the rate is between 50 and 60, atropine or Isuprel therapy is carefully utilized in our institution since these agents may slow the ventricular rate while increasing the atrial rate. If the rate falls below 50/minute, a bipolar catheter is passed into the right atrium by techniques similar to those described above and set on atrial demand pacing modes at a rate of 60 to 70. Since atrioventricular conduction per se is normal under these circumstances, the ventricular rate is also 60 to 70. If any degree of atrioventricular block is present along with sinus bradycardia, the electrode tip catheter is passed into the right ventricle for right ventricular demand pacing at a rate of 70 to 75. Nodal rhythm below rates of 60 is also treated by right ventricular demand pacing at rates of 70 to 75.

The most recent development in catheter electrode pacing in acute myocardial infarction patients involves the concept of overdriving. Despite the availability of digitalis, quinidine, procainamide, Xylocaine, propranolol, etc., some patients with episodic atrial and ventricular tachycardias continue to pose a clinical problem. The cardiac pacing catheter has been utilized both on a temporary and permanent basis to overdrive the heart (by either atrial or ventricular pacing) at rates greater than the sinus rate to prevent such ectopic rhythms. It must be emphasized that the use of the pacing catheter under these circumstances is *not* for patients with atrioventricular block but for patients with varied types of atrial and ventricular arrhythmias. The ultimate usefulness of this latter type of pacing remains to be established.

X-RAY FILMS OF THE MONTH

S. ELLIOTT PUCKETTE, JR., M.D.

PAUL UNDERWOOD, JR., M.D.

Medical College Hospital
Charleston, South Carolina



The above AP and lateral films were taken on a 43 year old gravida XIII, para XII female who by dates was near term. Several hours before admission, she had experienced a sudden severe pain extending from the right upper quadrant to a point inferior to the umbilicus, which subsided to a persistent ache. Her abdomen enlarged progressively, and no fetal movements were felt. She had not experienced any vaginal bleeding nor labor pains. Six years previously, she had a cesarean section and a Pomeroy tubal ligation.

On physical examination, her abdomen was protuberant and exhibited generalized tenderness. The fetal parts were easily palpable; however, no fetal heart tones could be heard.

Shortly after admission, the patient was explored with the findings of a hemoperitoneum of approximately 1500

ml associated with a uterus ruptured along the site of the previous classical cesarean section scar. The fetus had been total extruded into the abdominal cavity and was dead. A total hysterectomy was performed.

With rupture of the uterus, the radiographic picture will vary from no detectable evidence, to evidence that a portion, such as an extremity or all of the fetus, protrudes beyond the outline of the uterine shadow. With complete extrusion, as is in this case, the signs are precisely those of an abdominal pregnancy. On the AP film, one would note the abnormal position and presentation of the fetus, the absence of the gravid uterus, and on the lateral film, the fetal head overlying the maternal spine.

Other signs of an extra-uterine pregnancy not demonstrated in this example include unusual sharpness and clarity of the fetus and fetal parts, intermingling of the maternal gaseous shadows

with the fetal parts, unchanged position of the fetus on serial films, the presence of a pelvic or lower abdominal mass, or close proximity of the fetus to the maternal abdominal wall. Usually, several of these criteria are present in any given case. At times, hysterosalpingography may be necessary. We have found that the close proximity of the fetus to the maternal abdominal wall to be of little help. On the other hand, to see the fetal parts overlying the maternal spine on a true lateral film has been highly diagnostic in our hands.

An abdominal pregnancy was first described by Albucasis, an Arabian, in the 11th century. The true incidence of abdominal pregnancies is difficult to determine and reports vary considerably; however, the majority indicate an incidence of one in every two to four thousand intrauterine pregnancies. No relationship to gravidity exists, although there is a high incidence of previous tubal pregnancies in these patients. Most authors agree that virtually all abdominal pregnancies begin as tubal pregnancies which either by tubal abortion or rupture are extruded into the abdominal cavity and reimplanted. Primary abdominal pregnancies undoubtedly occur and may well be more common than believed.

The classic symptoms of an abdominal pregnancy are a history of lower abdominal pain associated with some vaginal bleeding that occurred at approximately 6 or 8 weeks gestation and cleared spontaneously in a few days. A few weeks later, the patient developed abdominal pain which persisted as the major complaint throughout the rest of her pregnancy. Once the fetus becomes active, fetal movements are painful. Intermittent episodes of vaginal bleeding continue. No history of Braxton Hicks contractions can be obtained.

The physical findings, of which only a few are usually present in any given abdominal pregnancy, are abnormal lies and

presentations of the fetus, unusual ease in palpating specific fetal parts abdominally, pain on fetal manipulation, usually loud fetal heart tones, a uterine souffle constant rather than intermittent, inability to produce a uterine contraction with abdominal manipulation of the pregnancy, ability to palpate the uterus separately, from the pregnancy, fetal small parts palpable in the cul-de-sac, and absence of ballottement.

Frequently, the diagnosis is extremely difficult to make; however, certain ancillary studies are extremely helpful. The x-ray findings have previously been discussed. Intravenous pitocin in a dilution of 10 international units per 1,000 ml of fluid can be given in a progressively increasing concentration in an attempt to produce a uterine contraction which can be diagnostic. If, however, no uterine contraction is observed, then the test is meaningless. It is only significant if uterine contractions are produced.

Management is even more difficult than diagnosis, and all measures are associated with severe morbidity and mortality. All agree that the fetus should be removed immediately, and only in special situations where viability could be obtained by observation of one or two weeks should one postpone surgery. The extremely high incidence of congenital anomalies in these fetuses and the constant possibility of impending catastrophic maternal hemorrhage makes one hesitant to observe, and when done, demands hospitalization with constantly available matched blood. Surgical techniques of removing the fetus and packing the amniotic sac to prevent hemorrhage and procedures of marsupializing the amniotic sac to the skin have both proved inadvisable due to severe infections. Attempts to remove the placenta have also been catastrophic from uncontrollable hemorrhage if a living fetus is present. If the placenta is attached to omentum or uterus or some other organ that can be safely

removed with the placenta left intact upon the organ, then this is a superb method of management.

However, usually the placenta is not so obliging; therefore, the treatment of choice has been to remove the fetus and leave the placenta in place. Infection, bowel obstruction, and other related complications frequently develop and have resulted in severe maternal morbidity. The addition of methotrexate postoperatively to speed the absorption of the placenta appears reasonable.

In abdominal pregnancies where the

fetus has been dead for three or more weeks, hemorrhage does not appear to be significant. Also in these cases, the marked vascularity about the placenta has decreased and usually the fetus and placenta can both be removed in these situations without severe danger.

Ectopic pregnancies account for 10 percent of the maternal mortality. The only ways to reduce this incidence is to always think "ectopic pregnancy" when managing any female with abnormal bleeding and abdominal pain. Early diagnosis is certainly the key to improved prognosis.

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President's Page



The problem of the osteopaths is proverbial; it is again upon us. The stand taken by the South Carolina Medical Association, stated simply, has been that we would accept them readily, once we are convinced that their training has been at least as good as ours.

We are told that there are 8,000 applicants yearly that are not accepted into our schools, and that a lot of these do go into schools of osteopathy. We are also told that their premedical training is the same, that the first, 2nd, or 3rd years in medicine are basically the same, but the differences are in the clinical years.

The American Medical Association in December 1968, voted to accept them and in this way hopes to influence their training. This action of necessity was referred to the American Medical Association Council on Constitution and By-Laws. SCMA has a man on this Council, and he has stated that he did not think it would pass.

With the hue and cry for more doctors, intelligence seems to indicate that the Legislature is all set this Session, for sure, to create some instant doctors. The argument is advanced that the doctors of osteopathy are more likely to go into rural practice, but there is certainly no assurance that they will do so.

Council appointed a committee that met with a committee of the DO's and a Subcommittee of the House Committee on Military, Public and Municipal Affairs. A compromise was worked out with the idea in mind that the Bills, should they be enacted by the Legislature, would be so written as to safeguard the health of the people of South Carolina.

Council approved and referred the matter to the House of Delegates. The House met on March 16, and after long and friendly debate, turned down the compromise—voting not to accept them under any conditions.

A committee was appointed by President Joel Wyman to present the views of the South Carolina Medical Association to the Legislature. This was ably done at a public hearing before the full Committee on Military, Public and Municipal Affairs. The Committee, after deliberation, a week later reported the three bills favorably, making them Committee Bills, and at this writing they are on the calendar of the House for consideration. The outcome is almost a foregone conclusion.

The conclusion one would draw is that the House of Delegates of the South Carolina Medical Association is not yet willing to accept the osteopaths until the conditions originally laid down are met, that is, that DO's are equally as well trained as MD's.

William L. Perry, M.D., President

Editorials

Where Did You Get Your IQ?

Having on one occasion put words in these columns which roused some of our psychiatrists to violent battle, the editor hesitates to touch on a psychiatric subject. However, he finds interesting a current dispute between a psychiatrist and a psychologist as to the significance of the long accepted tests of intelligence and the basic concept of whether one's intelligence is a matter of heredity or environment. The man of psychology holds out the genes carry the vital influences which develop the individual into a moron or a mastermind. The psychiatrist, who is rather given to expression of radical ideas, insists that the testing is not rele-

vant to education. Speaking of Negro children, he says:

"These young children have never been graded in an I.Q. as to what they do know—for their wit and guile, cleverness, and resourcefulness, and cynicism, and worldliness and poignancy in their own vibrant language which I have trouble understanding, *My children would flunk their I.Q. test.*"

Careful, Mr. Psychiatrist, this thing may be hereditary after all!

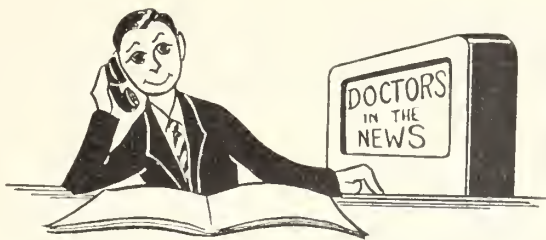
It does not seem to occur to the doctor that perhaps the people who test the Negro children do understand their language, and that no intelligent person would take an I.Q. test as pure gospel.

50 YEARS AGO



May 1919

The Abbeville County Memorial Hospital was established. Dr. J. Heyward Gibbes presented a paper on "Interesting Aspects of the Recent Epidemic of Influenza."



New members of the South Carolina Academy of General Practice include **Dr. J. T. Taylor III** of Summerville, **Dr. William P. Rhett** of Charleston, **Dr. Hans J. Heller** of Charleston, **Dr. R. B. Myers** of Moncks Corner, and **Dr. Hugh C. Godefray** of Conway. **Dr. Sloan Leonard** of the Medical School of Dallas, has accepted a position as pathologist on the staff of Self Memorial Hospital, Greenwood. **Dr. John J. Clinton**, who has practiced medicine for 53 years in Lancaster County, was honored recently by members of his church, community and friends during a program at Mount Zion A.M.E. Zion Church. **Dr. J. C. Burge Jr.** will be associated in Ridgeway with the work at Fairfield Home and other institutions, along with **Dr. Joel Koslow** of Fort Jackson. **Dr. Paden E. Woodruff Sr.**, retired, was saluted recently as being the oldest living doctor in Pickens County.

Dr. Harold S. Gilmore, well-known physician of Marion County, recently underwent heart surgery in Houston, Texas. **Dr. S. C. Disher Jr.** of North has started coming to Walterboro twice a week to work in the office of the late **Dr. D. L. Chisholm**. **Dr. Disher** will continue in Walterboro until a permanent physician has been secured for the area. **Dr. Allen P. Jeter** recently opened new offices on Moultrie Street in Winnsboro. **Dr. John L. Bundy**, a retired Rock Hill physician, has been appointed to serve as temporary student health director for Winthrop College. **Dr. J. Vernon Jeffords** of Spartanburg has been elected president-elect of the S. C. Tuberculosis and Respiratory Disease Assn. **Dr. Carter P. Maguire**, president of the Southeastern Society of Plastic and Reconstructive Surgeons, recently presided at the society's convention in Hot Springs, Ark. **Dr. George H. Orvin** of Charleston has been named president-

elect of the S. C. branch of American Psychiatric Assn.

Dr. Jennings K. Owens of Bennettsville recently was awarded the highest award in scouting, the Silver Beaver award. **Dr. Owens** is also the recent recipient of a twenty-five year service emblem from Seaboard Coast Line Railroad. **Dr. Marion Burnside Hook** of Columbia has been elected chief of staff of S. C. Baptist Hospital. Serving as vice chief of staff is **Dr. William E. Gause**. **Dr. Charles F. Crews** continues as secretary. **Dr. Joseph L. Goodman** of Charleston has been elected a fellow in the College of Industrial Medicine. **Dr. J. J. Alton** of Columbia was recognized recently for 12 years service as camp doctor by the Congaree Girl Scout Council. **Dr. Gibson Shealy** of Easley and **Dr. Rhett Barnwell Myers** of Moncks Corner were elected to membership in the American Academy of General Practice. Recently re-elected to membership were **Drs. James A. Underwood Jr.** of Newberry, **Dexter M. Evans Jr.** of Lake City, **James S. Garrison** of Johnston, **Samuel E. Miller** and **Harry Corbett Tiller** of Georgetown, **Dwight H. Smith** of Williamston, and **David K. Stokes** of Greenville.

Dr. Roy A. Howell of Bennettsville and **Dr. Rembert O. Burgess** of Spartanburg have been elected to membership in the American College of Physicians.

The School of Allied Health Sciences at the Medical College of S. C. has announced the awarding of dual appointments to the following: **Dr. D. Charles Dixon**, Assistant Professor of Pathology, to the rank of Assistant Professor of Cytopathology; **Dr. Edward E. McKee**, Professor of Pathology, to the rank of Professor of Cytopathology; and **Dr. H. Rawling Pratt-Thomas**, Professor of Pathology, to the rank of Professor of Cytopathology.



Mrs. Davis Moise, President
Woman's Auxiliary to SCMA

MEETINGS

The Annual Otolaryngologic Assembly of 1969 will be held October 4 through 10, 1969, in the Illinois Eye and Ear Infirmary at the Medical Center, Chicago. The Department of Otolaryngology of the College of Medicine of the University of Illinois offers a condensed postgraduate basic and clinical program for practicing otolaryngologists under the direction of Doctor Emanuel M. Skolnik. It is designed to bring to specialists current information in medical and surgical otolaryngology.

A separate, but correlated course "Head and Neck Radiology Conference" this year will be held on Friday and Saturday, November 28 and 29, 1969, under the guidance of Doctor Galdino E. Valvassori. For further information about the radiology course, write to Doctor Valvassori, Radiology Department, College of Medicine.

Interested otolaryngologists should direct their inquiries to the mailing address: Otolaryngology P. O. Box 6998, Chicago, Illinois 60680.

The Institutes for Physicians and Nurses in the Care of Premature and Other High-Risk Infants are being continued at the New York Hospital-Cornell Medical Center under the sponsorship of the New York State Department of Health and the U. S. Children's Bureau. These institutes are designed to meet the needs of physicians and nurses with responsibilities for the conduct of hospital high-risk and premature nurseries and special centers and of medical nursing directors and consultants in state and local programs for the care of such infants.

Institutes for the 1969-70 fiscal year have been scheduled as follows:

Physicians

September 22-October 3, 1969

November 10-21, 1969

January 19-30, 1970

March 16-27, 1970

May 18-29, 1970

Nurses

September 8-October 3, 1969

October 27-November 21, 1969

January 5-30, 1970

March 2-27, 1970

May 4-29, 1970

For more information write Dr. Hilla Sheriff, S. C. State Board of Health, Columbia, S. C. 29201.

The Department of Otolaryngology of the Illinois Eye and Ear Infirmary and the College of Medicine of the University of Illinois at the Medical Center, will conduct a postgraduate course in Laryngology and Bronchoesophagology from November 3 through 14, 1969. This course is limited to fifteen physicians and will be under the direction of Paul H. Holinger, M.D. It will be held largely at the new Illinois Eye and Ear Infirmary, 1855 West Taylor Street, Chicago, and will include visits to a number of Chicago hospitals. Instruction will be provided by means of animal demonstrations and practice in bronchoscopy and esophagoscopy, diagnostic and surgical clinics, as well as didactic lectures.

Interested registrants will please write directly to the Department of Otolaryngology, College of Medicine, University of Illinois at the Medical Center, Postoffice Box 6998, Chicago, Illinois 60680.

SOUTHERN OBSTETRIC AND GYNECOLOGICAL SEMINAR

The 15th Annual Southern Obstetric and Gynecologic Seminar, Inc. will be held this year at the Grove Park Inn in Asheville, North Carolina, Monday, July 28 through Friday, August 1. Sessions are held in the morning, with the afternoon free for recreation and family entertainment. The active faculty this year will be Drs. Bayard Carter and Art Christakos of Duke University; Dr. Robert Ross, President-Elect of the American College of Obstetrics and Gynecology; Drs. Cary Dougherty, Abe Mickal and George T. Schneider, of LSU; Drs. Robert Franklin, Raymond Kaufman and Herman Gardner, of Baylor University; Dr. Erskine Carmichael, of the University of Alabama; Dr. Robert Greenblatt, of Georgia; and Dr. Stewart Fish, of the University of Tennessee, as well as Dr. Charles Hendricks, of the University of North Carolina. Registration fee is \$50.00 which includes a cocktail party and banquet during the

middle of the week. Registration is limited to the first 50 applicants. For information and registration, please write Dr. George T. Schneider, Ochsner Clinic, 1514 Jefferson Highway, New Orleans, Louisiana 70121.

The American College of Physicians will present "Neurology and the Internist" June 11-14 in Winston-Salem, N. C. The course is being sponsored by Bowman Gray School of Medicine, Wake Forest University.

A course in Cardiopulmonary Resuscitation will be held in Charleston, S. C. May 30-31 at the Fort Sumter Hotel and the Medical College of South Carolina. Three training sessions will be conducted concurrently for physicians, nurses and emergency rescue-industrial safety personnel.

Dr. Archer S. Gordon, M.D., Ph.D. of the University of Southern California Medical School and chairman, American Heart Association, Cardiopulmonary Resuscitation Committee, will be guest speaker.

The course is a service of the S. C. Heart Association.

THE MONTH IN WASHINGTON

The Department of Health, Education and Welfare issued proposed regulations setting standards for rubella vaccine, making it possible it will be ready for distribution in limited quantities by about June 1.

The standards cover production methods, safety, purity and potency. They were developed by the Division of Biologics Standards, a unit of the National Institutes of Health. Final regulations could be published as early as May 3. Indications were that two manufacturers would have a vaccine ready for initial distribution soon after the regulations had been made final.

The regulations apply to vaccines containing a live virus strain known as HPV-77, which is grown in either duck embryo or dog kidney cell culture systems. Experimental vaccines produced in accordance with the standards have undergone extensive community testing in the United States and abroad. Two manufacturers, Merck, Sharpe & Dohme and Philips Roxane Laboratories have produced vaccines based on this strain.

"We hope that more than one vaccine will be available," Dr. Robert Q. Marston, NIH Director, said. "Regulations covering the use of other virus strains and culture media for rubella vaccine production

will be formulated on the basis of extensive tests now going on."

Smith, Kline & French Laboratories has tested widely an experimental vaccine containing the Cendehill strain of rubella virus.

The Food and Drug Administration has taken the first step to halt the marketing of 78 antibiotic combination products.

The ultimate action was recommended by the National Academy of Sciences-National Research Council, which is evaluating the effectiveness of about 3,600 new drugs marketed from 1938 to 1962.

Generally, the 78 products were found ineffective as fixed combinations for claims made in their labeling. The FDA emphasized that this does not necessarily mean that either the antibiotics or other active ingredients of the products are ineffective when used alone.

"But the use of two or more active ingredients in the treatment of a patient who can be cured by one is irrational therapy," said Herbert L. Ley, Jr., M.D., Commissioner of Food and Drugs. "It exposes the patient to an unnecessary risk. Antibiotics should be used like a rifle rather than a shotgun."

The majority of the 78 products are antibiotic-sulfa combinations in tablet, capsule, or liquid form. Also included are 16 penicillin-streptomycin combinations that are given by injection.

Other antibiotics used in the preparations include erythromycin, neomycin, tetracycline, chlortetracycline, nystatin, oxytetracycline, oleandomycin, and triacetyloleandomycin. In addition, some of the preparations contain analgesics, vitamins, or other ingredients.

Many of the affected products have been promoted widely and found wide acceptance in the medical profession. Several of the manufacturers promptly said they would contest the FDA ruling and others were expected to oppose it also. The manufacturers were given 30 days to submit any new data on efficacy of the products.

There were 12 products in the first groups, announced last December. A decision still was pending on whether manufacturers of those products should have additional time to submit evidence of efficacy.

The FDA can halt the marketing of antibiotic-containing preparations by deleting them from regulations listing the antibiotic drugs acceptable for certification. Antibiotics and insulin, unlike other drugs, must be certified on a batch-by-batch basis before they can be marketed.

* * *

Two spokesmen for the medical profession asserted before a Senate subcommittee that the policies and scientific journals of their organizations are not biased in favor of the prescription drug industry because of the drug advertising revenue.

Sen. Gaylord Nelson (D., Wis.), chairman of the Senate Monopoly Subcommittee which is making a broad study of the ethical drug industry, accused the medical journals of following the pharmaceutical industry's line to get advertising dollars.

Both Dr. Edward R. Annis, a member of the AMA Board of Trustees, and Dr. Maynard I. Shapiro, president of the AAGP, emphatically denied the charge. Both cited the high, objective advertising standards of their organizations' publications.

"The American Medical Association's programs and policies have never been, are not now, and will never be shaped by any dependence on the drug industry," Dr. Annis said. "And to assure that there is no conflict of interest, the AMA has consistently separated the editorial management, advertising acceptance, and business management of each of its scientific publications.

"We believe that no publication surpasses our own standards for acceptable advertising."

Nelson sharply criticized the Journal of the American Medical Association as to the ads it carried on Chloromycetin after the drug had been judged to be extremely dangerous. Annis acknowledged that "one

Madison Avenue effort—slipped through the net” of AMA advertising standards. But he pointed out the various warnings on the drug carried in the editorial content of JAMA and other AMA publications.

“Advertising is screened by a group of physicians, all of whom we consider qualified to perform their task,” Dr. Shapiro said. “We don’t list the names of these

physicians in our magazines because we believe they prefer a degree of anonymity. All are medical school faculty members and all, in our opinion, are well qualified to screen pharmaceutical advertising.”

Dr. Shapiro also said that at least two drugs firms had canceled ads in AAGP publications after they had carried editorials adverse to the companies.

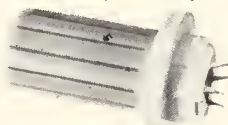
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TB is still around.

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TUBERCULIN TINE TEST

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Precautions: With a positive reaction, consider further diagnostic procedures. Use with caution in persons with active tuberculosis or known allergy to acacia. Vesiculation, ulceration, or necrosis may occur at the test site in highly sensitive persons.

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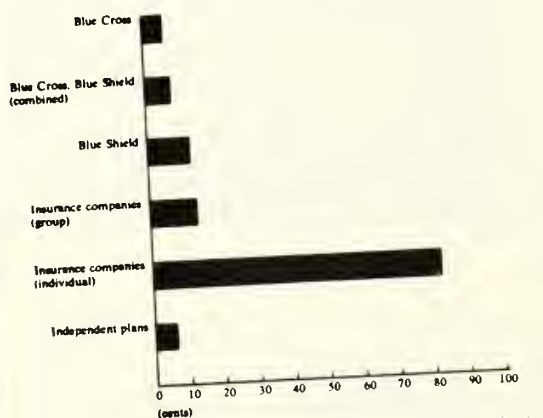
A Division of American Cyanamid Company, Pearl River, N. Y.

Memo from BILL SANDOW

One out of every three persons in the United States now has regular membership in Blue Cross. A little more than one out of four (27.9 per cent) have regular coverage by Blue Shield. Analysis by Cross and Shield shows that we can expect a sixfold increase in claims and benefits by 1975.

Our own local Blue Cross enrollment has now gone over 390,000 and Blue Shield is over 375,000. Let's adjust to the prospect that our Blue Shield payments will top \$5,000,000 this year. We have to be efficient and fast to stay ahead of this!

To provide \$1 of benefits, it costs:



Source: Office of Research and Statistics, Social Security Administration

Blue Cross-Blue Shield

OF SOUTH CAROLINA

WHERE ARE WE IN HEALTH PLANNING TODAY?

E. KENNETH AYCOCK, M.D.
State Health Officer

Where are we in health planning today in South Carolina? Now, since the passage of Public Law 89-749, we have entered the era of comprehensive health planning with the goal of promoting and assuring the highest level of health attainable for every person, in an environment which contributes positively to healthful individual and family living. The attainment of this goal depends on an effective partnership, involving close intergovernmental collaboration, official and voluntary efforts, and participation of individuals and organizations.

The Comprehensive Health Planning Act provides us with the opportunity to plan a blueprint or framework in which to coordinate all existing health programs into more meaningful comprehensive services. This planning encompasses health manpower, health facilities, and all health services furnished by both public and private agencies or persons such as physicians, hospitals, schools for nursing, welfare health programs, health departments, etc., but without interference with existing patterns of private professional practice of medicine, dentistry, and related healing arts.

The map above shows the four regions and thirteen areas into which South Carolina has been divided for the purpose of comprehensive health planning. The Appalachian Regional Health Policy and Planning Council under the direction of Mr. Robert Johnson is doing the health planning for the six Piedmont counties of Spartanburg, Cherokee, Greenville, Pickens, Oconee, and Anderson. Dr. H. Parker Jones is the project director for the Rural Health Project in Beaufort, Colleton, Hampton, and Jasper Counties.



Mr. Eugene Berres, executive director of United Community Services, Inc., Columbia, is project director of the Richmond-Lexington-Fairfield Health Planning Council to be formed soon under a federal grant. Mr. Charles Fruit, executive director of United Community Services, Inc., Charleston, is director of the Health Planning Council involving Charleston, Berkeley, and Dorchester Counties. The Honorable O. M. Higgins of Georgetown is chairman of the Horry-Williamsburg-Georgetown Planning Commission.

Three economic development and multi-planning commissions or districts now established in South Carolina are potential sponsors of health planning councils. They are: the Lower Savannah Economic Development District which would plan for Aiken, Barnwell, Allendale, Orangeburg, Calhoun, and Bamberg Counties under the direction of Mr. J. B. Gunnells; the Upper Savannah Economic Development District which would plan for Edgefield, Saluda, McCormick, Laurens, and Greenwood Counties under the direction of Mr. D. B. Mackey; and the Pee Dee

Economic Development District which would plan for Dillon, Marlboro, Chesterfield, Florence, Darlington, and Marion Counties under the direction of Mr. R. P. Mauney.

Conceivably, the comprehensive health planning program could develop into one of the most far-reaching health programs in history. Medical leadership on the local level is of utmost importance to provide the necessary qualified leadership to keep the program within the proper channels.

Similarly, close contact with consumers of health services is essential. The people who are in need of health services are ultimately aware of their problems in obtaining such services and of the efficiency of the implemented programs. Toward this purpose the State has established a State Advisory Council for Comprehensive Health Planning to advise the State Board of Health as the state health planning agency in carrying out its func-

tions. The Council is composed of 25 members appointed by the governor, the majority of which are representatives of consumers of health services in accordance with state and federal law. The other members include representatives of state and local agencies and non-governmental organizations and groups concerned with health.

To insure that the health care programs are relevant to the needs of the people to be served, we must have local planning with the professionals, the institutions, and the providers and consumers of health services. It is in the local community that health services are provided, and it must be in the local community that needs are recognized and plans made to meet these needs. People—not cost, not diseases, not jurisdictional concerns of providers and professionals—but people must be the central focus of our health planning activity.

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RELATIONSHIPS BETWEEN MILITARY MEDICINE AND SOUTH CAROLINA COMMUNITY HEALTH PROGRAMS

REGISTRAR
Military Medicine
Ft. Jackson, S. C.

The practice of military medicine in South Carolina is the practice of total community health services. Although the majority of the serviced population at military installations is that of young men between the ages of 18 and 21, the range is the same as that serviced by any non-military health care facility. Working under the team concept, military medicine at Fort Jackson, S. C., for example, coordinates the entire spectrum of health care services. This team includes the Preventive Medicine Officer, an army physician working as a public health officer, the Veterinarian, the Dentist, the Army Health Nurse, the Sanitary Engineer, the Safety Engineer, the Civil Engineer, the Mental Hygienist, the Food Service Officer, as well as the entire staff of the hospital. This team conserves the fighting strength of our nation through the detection, prevention and treatment of the military communities' health care problems.

The team continually involves itself with its civilian community counterparts through day to day interaction of resources. Communicating relationships have been established to insure the timely dispatch of information on communicable diseases and their incidence. The military hospital always maintains a staff of consultants from the nearby civilian community to insure adequate consultative coverage of all specialties in the field of medicine. Frequently a civilian physician treating a military dependent may use the services of a military facility's laboratory to reduce the expense to his patient. And on the other hand a military physician may, at expense to the Federal Government, secure exams such as EEG's

EMG's or RAI uptakes from a local civilian source. In the realm of exchange of information of a professional nature, local inter-use of professional staff-meetings, monthly medical society meetings, as well as specialty ward rounds are used. These relationships have been helpful in establishing rapport and have enhanced the service given the military patient.

The administration involved in implementing Congressional decisions affecting military/non-military joint participation in providing medical benefits for the military community permits close coordination and mutual benefits. The military community is always available to assist in alleviating problems in this area.

Generally speaking, a military member cared for by appropriately recognized professional medical agencies, facilities and practitioners while that member was in an authorized leave or travel status or was cared for under emergency conditions, may have his bills paid by the Federal Government, and generally speaking the nearest military medical facility of the same branch of service as the patient, is responsible for processing the administrative work. Permanent obstacles which may delay payment are lack of identification, ie, Name, Grade, Service Number, Unit and Station; unverified status, ie, authorized leave or travel orders, and lack of signature of payee or authorized representative certifying to the correctness and justness of the fee. For example, the U. S. Army Hospital, Fort Jackson, South Carolina would assist both the hospital and the physician in securing payment for fees and services rendered to a soldier by a local hospital and physician.

In this area, fees for services rendered


to retired personnel and dependents are processed by Mutual of Omaha Insurance Company, P. O. Box 1298, Omaha, Nebraska 68101. This agency has the primary responsibility for answering questions concerning the program for military dependents. The Executive Director, Office for the Civilian Health and Medical Program of the Uniformed Services, Office of the Surgeon General, Department of the Army, Denver, Colorado 80240, administers the civilian care program of all the uniformed services in the United States as enacted by the Military Medical Benefits Amendment of 1966 (PL 89-614). This office is a secondary source available in answering questions concerning the program. A third source is the Hospital Registrar of your Air Force or Army Hospitals or the Patient's Affairs Officer in the Naval Hospital.

For example, a dependent of an army service man stationed in Republic of Vietnam was cared for and the physician, with offices in the midlands, needs to know how to present his claim for fees. The Registrar of the Army Hospital at Fort Jackson, S. C. could provide assistance and should be the agency contacted.

There is currently under revision a "Physician's Manual" outlining the Civilian Health and Medical Program of the uniformed services and will be available through Mutual of Omaha Insurance Company in Omaha, Nebraska, to provide the answers to these and other questions, in the near future.

Your military medical community appreciates the opportunity to contribute to this issue and trusts that this article will open the door to more and better relationships and communication.

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MALLAGESIC

Analgesic—Non-narcotic. Rx

Manufacturer: Mallinckrodt Pharmaceuticals

Composition: Acetaminophen 500 mg. Butabarbital 16 mg

Indications: Relief of pain associated with nervous tension.

Contraindications: None mentioned.

Dosage: Adults: 1 tablet q. 4h., not to exceed 5 tab./24 hours, Children 8-12 years: ½ tab. q. 4-6h., not to exceed 2 tab./24 hours.

Supplied: Tablets—bottles of 100 and 1,000.

OTOMYXIN

Ear Preparation. Rx

Manufacturer: Paul B. Elder Co.

Composition: Polymyxin B sulfate 2,000 U. Neomycin sulfate 0.35%. Hydrocortisone 0.25%. Dipropion HC1 0.50%

Indications: External otitis.

Contraindications: Tuberculous, fungal or viral conditions of the skin; patients with a history of sensitivity to any of the ingredients.

Dosage: 3-4 drops three times daily in the affected ear.

Supplied: Liquid—dropper bottles of ½ oz.

PRAMILET-FA

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Manufacturer: Ross Laboratories

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Indications: Supportive nutritional supplementation during pregnancy.

Contraindications: None mentioned.

Dosage: One tablet daily.

Supplied: Filmtabs—bottles of 100.

SINUBID

Cold Prep.—General. o-t-c

Manufacturer: Warner-Chilcott Laboratories

Composition: Acetaminophen 300 mg. Phenacetin 300 mg. Phenylpropanolamine HCl 100 mg. Phenyltoloxamine citrate 66 mg.

Indications: Sinus or other frontal headache, sinusitis, allergic rhinitis, vasomotor rhinitis, coryza.

Contraindications: Hypersensitivity to any of the ingredients.

Dosage: Adults: 1 tablet q12h. Children 6-12 years: ½ tablet q.12h. Tablets should not be chewed.

Supplied: Tablets—bottles of 100.

Draft-Liable Physicians May Join National Guard

A limited number of draft liable physicians may be appointed this year in reserve components, including the Air National Guard. Individuals appointed must be out of internship at least one year at time of appointment and will be authorized commissioned grades according to education and experience. Service in the Air National Guard includes opportunity for qualification as a Flight Surgeon through a special course at the School of Aviation Medicine for at least one applicant.

Applications may be made at any time but are subject to review by the Department of Defense. Individuals on Selective Service requisitions are not eligible for appointment.

Complete information is available in the Office of The Adjutant General, Columbia, or at McEntire ANG Base, near Columbia.

DEATHS



Dr. James Rogers Young

Dr. J. R. Young, 87, surgeon and longtime Anderson civic leader, died at Anderson Hospital March 21, 1969.

After graduation from Erskine College in 1901, Dr. Young began the study of medicine at Vanderbilt Medical School in Nashville, where he received his M.D. degree. He began his medical practice in Anderson in 1906.

Dr. Young was president emeritus of the South Carolina division of the American Cancer Society, having served as chairman of the executive board of that organization from its inception until he retired from the board in 1965.

He was the moving spirit in numerous civic and religious undertakings in Anderson and in the advancement and growth of Erskine College.

In 1922 Dr. Young became a fellow in the American College of Surgeons and was president of the South Carolina Medical Association in 1935. From 1953-54 he was president of the Southeastern Medical Congress.

Dr. Young was one of the founders of the Rose Ramer Cancer Clinic at Anderson Hospital and was instrumental in securing an auditorium for the hospital

which was named in his honor.

In 1922 Dr. Young received the Algeron-Sullivan award for his excellent alumni work for Erskine College and in 1943 the college bestowed upon him the Doctor of Laws Degree.

Dr. Young was president of the Anderson Chamber of Commerce, a member of the School Board, and served for many years as its chairman. He also served on City Council.

Dr. Richard R. Prentiss

Dr. Richard R. Prentiss of Yorges Island, a retired physician, died April 2, 1969 at his residence.

Dr. Prentiss was born in 1884 in Jacksonboro, a son of the late Dr. Christopher J. Prentiss. He attended Porter Military Academy and was a 1910 graduate of the Medical College of South Carolina.

He practiced medicine in Marlboro County for a number of years, moving to Meggett in 1925.

Dr. James G. Lowry

Dr. James G. Lowry, a retired doctor who had practiced for 50 years in Lowrys, S. C. died March 6 in a Charlotte, N. C. hospital.

Dr. Lowry was graduated from The Citadel and the Medical College of South Carolina. He retired in 1952.

Dr. David L. Chisholm

Dr. David L. Chisholm, 54, died March 12, 1969 in a Beaufort hospital after being in an automobile accident. He had practiced medicine in Colleton County since 1943.

Dr. Chisholm received his education at Benedict College in Columbia and received his medical degree from Meharry College in Nashville. Dr. Chisholm interned at St. Horner G. Phillips Hospital in St. Louis and practiced medicine at Tuskegee Veteran Administration Hospital before coming to Walterboro.

The Journal of The SOUTH CAROLINA

Medical Association

JUNE, 1969—VOL. 65, NO. 6

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The views expressed in this publication are those of the writers and do not necessarily reflect the opinions of the South Carolina Medical Association.

Contributions of Original Articles

Length—Short articles of about 2,500 words (about 8 typewritten pages, double spaced) are preferred. Longer articles ordinarily will defer to the shorter ones in schedule of publication.

Manuscripts—Manuscripts should be typewritten, double spaced, and the original and a carbon copy submitted.

Illustrations—Ordinarily publication of 4 small illustrations or the equivalent accompanying an article will be paid for by The Journal. Any number beyond this must be paid for by the author except under unusual conditions. Illustrations should be sent as glossy prints or graphs in black ink with lettering large enough to show after reduction.

References—Should conform to the following order: surname and initials of author, title of article in small letters, name of periodical, with volume, page, month, day of the month if weekly, and year—e.g.: Lee, G. S.: The heart rhythm following therapy with digitalis, *Arch Int Med* 44:554, Dec. 1942. They should be listed numerically in order of appearance in the text. Standard abbreviation for journals should be used. Note that periods are not used with these abbreviations as indicated by the *Index Medicus*. Other abbreviations should also be standard—e.g. mg, ml, Gm.

Reprints—Reprints will be made for the author at established rates.

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References: 1. Vernier, R. L., in Patient Care Feature: *Patient Care*, 1:20 (Feb.) 1967. 2. Beeson, P. B.: "The Infectious Diseases," in Beeson, P. B., and McDermott, W. (eds.): *Cecil-Loeb Textbook of Medicine*, ed. 12, Philadelphia, W. B. Saunders Company, 1967, p. 230.

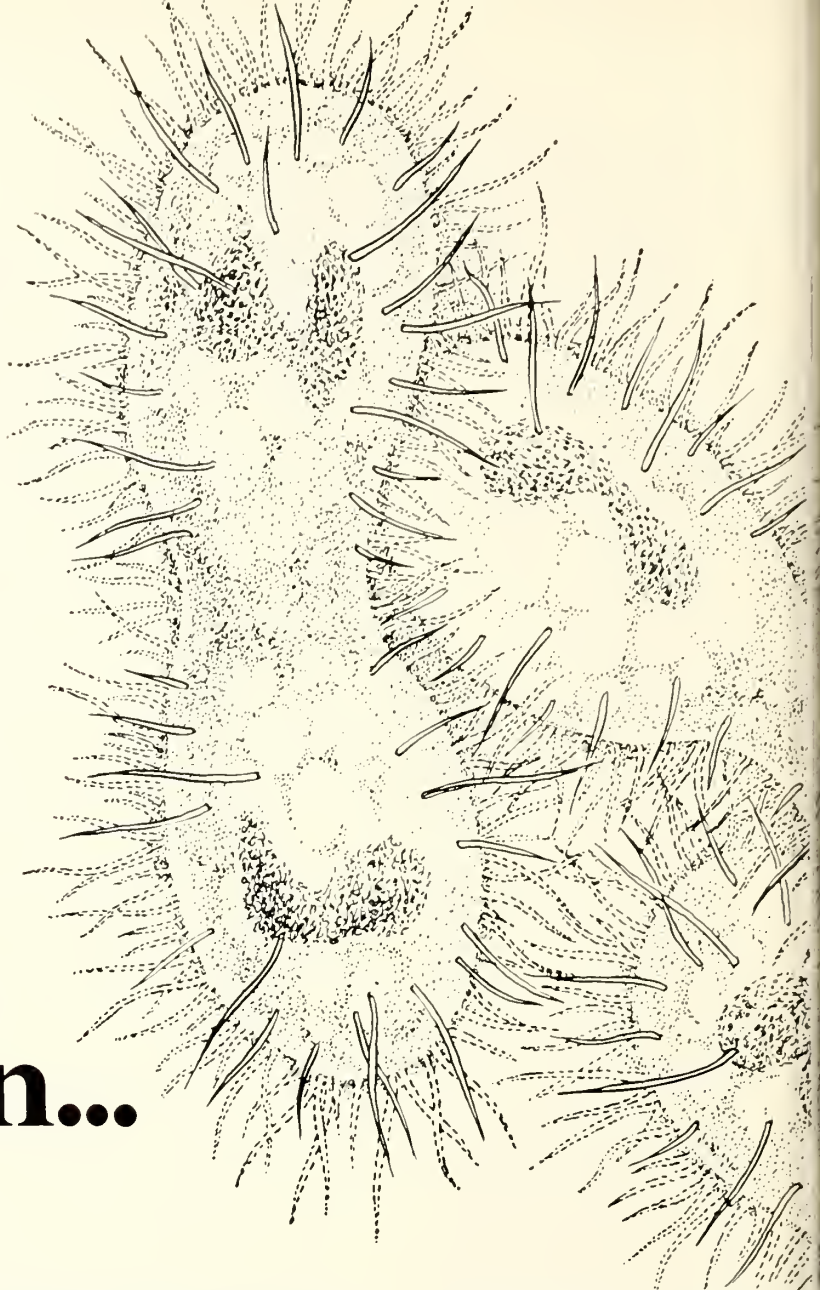
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IN VITRO AND IN VIVO SENSITIVITY OF STAPHYLOCOCCI AND SELECTED BACTERIA TO MINOCYCLINE, TETRACYCLINE AND DOXYCYCLINE

C. D. GRABER
L. P. JERVEY
F. MARTIN
B. H. BOLTJES

Abstract

Tube sensitivity tests of approximately 200 bacteria to minocycline, tetracycline and doxycycline were performed and clinical efficacy of the first antibiotic was studied in certain infections in man. Freshly isolated *S. aureus* (95 strains) including 15 serotypes (Wood 46, 28 and Cowan II) among others proved somewhat more sensitive to minocycline (< 3 mcgm, 94%) than to doxycycline (< 3 mcgm, 87%) or tetracycline (< 3 mcgm, 70%). Similarly 88% of *S. epidermidis* strains were sensitive to .78 mcgm or less of minocycline as compared to 55% for doxycycline and tetracycline. Eleven tetracycline resistant strains of *S. aureus* and 6 of *S. epidermidis* (> 12 mcgm) showed excellent sensitivity to both minocycline and doxycycline (< 3 mcgm). All 11 *Neisseria meningitidis* cultures, 4 of which were Group C sulfadiazine resistant strains from the 1967 Fort Jackson, South Carolina outbreak, proved sensitive to all

three analogues (< .78 mcgm). Most Gram negative bacteria and particularly *Proteus* and *Pseudomonas* proved uniformly refractory to all three antibiotics. Early clinical observations in 15 patients treated with minocycline indicate satisfactory response in staphylococcal pyoderma, pneumococcal pneumonia and a number of miscellaneous minor infections due to Gram positive micro-organisms. Exquisite sensitivity of sulfadiazine resistant *N. meningitidis* to both minocycline and doxycycline suggests evaluation of these antibiotics as possible prophylactic agents in meningococcal outbreaks.

Minocycline, (7-dimethylamino-6-deoxy-6-demethyltetracycline) a semi-synthetic derivative of tetracycline, is reported to have activity against staphylococci¹ resistant to tetracycline. To confirm this observation, more than 100 fresh isolates of *S. aureus* and *S. epidermidis* obtained from hospitals in the Charleston, South Carolina area were tested by the tube sensitivity method to both minocycline and tetracycline as well as to doxycycline.

Departments of Microbiology and Medicine, Medical College of South Carolina, Charleston, South Carolina 29401.

In addition, approximately 100 other bacteria, in most cases obtained as fresh isolates from patients, were tested by the tube method to these three drugs. Where indicated minocycline was used to treat certain patients and these early clinical findings and the *in vitro* testing are the subject of this report.

Materials—Methods

In Vitro Testing:

Bacteria for testing were grown at 35° C for 6 hours in single strength trypticase soy broth and then added in measured aliquots immediately to double strength broth to obtain 10^6 organisms per milliliter for inoculation of water dilutions of the antibiotics. For certain fastidious organisms (Group A beta hemolytic streptococci and *Hemophilus* species), 1% defibrinated calf blood was added to supplement the broth. Incubation of all broth tubes and controls was accomplished at 35° C. Reading of MIC (minimum inhibitory concentration) of the antibiotic was done by turbidity; MBC (minimum bactericidal concentration) determinations and doubtfully turbid tubes were streaked to antibiotic free blood agar plates to detect growth. Tetracycline and minocycline were supplied as carefully assayed hydrochloride in 20 mg amounts of dry powder by Dr. Rex Perkins of Lederle Laboratories. The doxycycline was supplied as hydrochloride in 100 mg amount by Pfizer Laboratories. Serotyping of *S. aureus* strains was done in the laboratory of Dr. Jay Cohen, National Communicable Disease Center, Atlanta, Georgia.

Results

In Vitro Testing

Two hundred fresh bacterial isolates, preponderantly staphylococci, were tested in tube dilution to the three antibiotics mentioned with the following results:

Staphylococcus aureus

Ninety four per cent of the 95 strains of *S. aureus* tested, including 15 Cowan serotypes, proved sensitive to 3 mcgm or less of minocycline (Figure 1). Similarly

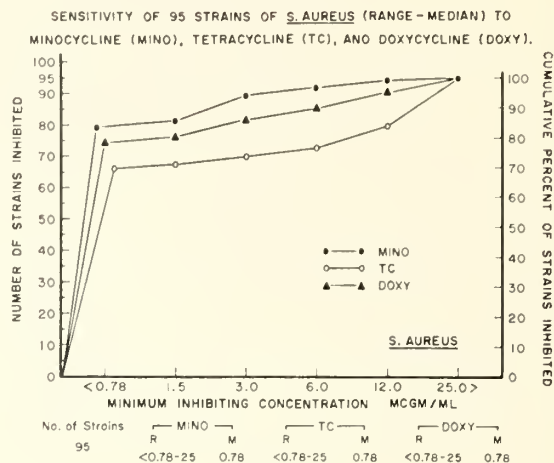


Fig. 1

87% of these organisms proved sensitive to doxycycline while 70% were sensitive to tetracycline at this concentration. The range of susceptibility (.78 to 25 mcgm) and the median (.78 mcgm) were the same for this organism for all three antibiotics. However, 11 tetracycline resistant (> 25 mcgm) *S. aureus* strains proved sensitive

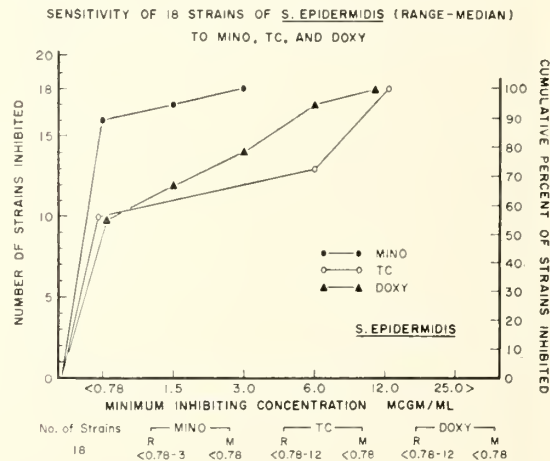


Fig. 2

to both minocycline and doxycycline (< 3 mcgm). The minimum bactericidal concentration activity (MBC) for all three antibiotics for the first 10 strains of *S. aureus* isolated was found to be in excess of 25 mcgm.

Staphylococcus epidermidis

Sixteen of the 18 strains (Figure 2) of *S. epidermidis* (88%) were sensitive to < .78 mcgms of minocycline but only 10 strains (55%) proved to be sensitive to

the same concentration of tetracycline and doxycycline. Six tetracycline resistant strains (> 12 mcgm) were found to be quite sensitive to minocycline and doxycycline (.78 mcgm). Range of sensitivity of *S. epidermidis* to minocycline was less (.78-3 mcgm) than for doxycycline or tetracycline although the median for sensitivity to all three antibiotics (.78 mcgm) was the same.

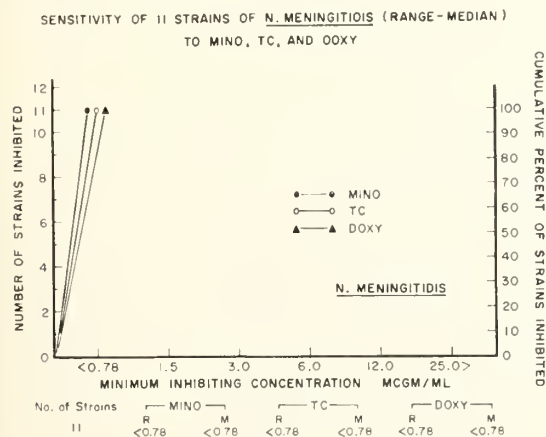


Fig. 3

N. meningitidis

All 11 strains of *N. meningitidis* tested, (Figure 3) including 4 Group C, maltose negative, sulfadiazine resistant organisms from a meningitis outbreak at Fort Jackson, South Carolina in 1967, proved exquisitely sensitive ($< .78$ mcgm) to all three antibiotics.

Proteus sp.

The 15 strains tested varied in their susceptibility to the three antibiotics. Minocycline was somewhat more active against *Proteus*, with 9 strains sensitive at 6 mcgm or less while 4 strains were sensitive at this level of doxycycline or tetracycline. Ten strains (67%) of *Proteus* required 25 mcgm or more of doxycycline to have growth inhibited. The median for both doxycycline and tetracycline was higher than for minocycline (Figure 4).

Pseudomonas sp.

Nineteen pseudomonads tested proved generally quite resistant to all three antibiotics. Only 4 strains were sensitive to

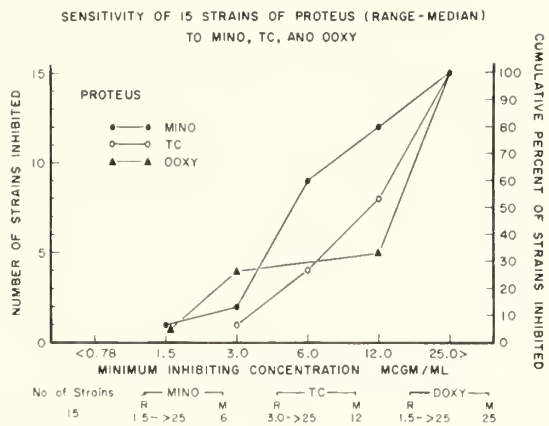


Fig. 4

6 mcgm or less of either minocycline, tetracycline or doxycycline (Figure 5).

Selected Gram Negatives

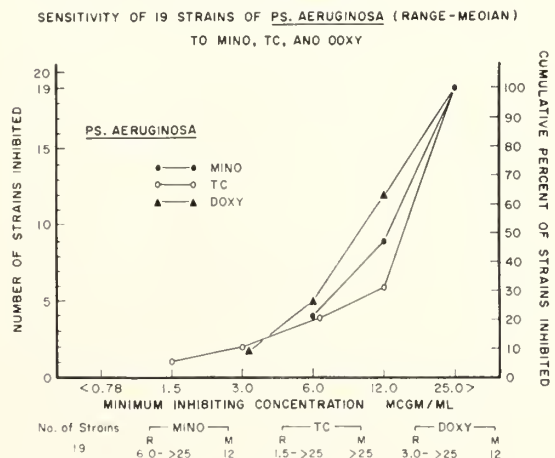


Fig. 5

E. coli (2 strains), *Klebsiella-Aerobacter* sp. (4 strains) showed variable sensitivity to the three antibiotics. Two *Shigella* strains, (*S. sonnei* and a provisional new *Shigella* strain, *S. ellensesis*) were both inhibited by .78 mcgm of the three antibiotics. A *Hemophilus aphrophilus* strain isolated from a case of endocarditis was sensitive to all three antibiotics ($< .78$ mcgm). Two *Herellea vaginicola* cultures were exceedingly refractory to all three antibiotics (> 25 mcgm).

Selected Gram Positives

Five enterococci proved quite insensitive (> 25 mcgm) to minocycline, doxycycline and tetracycline. Four Group A, beta hemolytic streptococci were quite sensi-

tive ($< .78$ mcgm) to the three antibiotics. One culture each of *Listeria monocytogenes*, *B. cereus* and *D. pneumoniae* were not inhibited by 25 mcgm of any of the three antibiotics. A single *Corynebacterium diphtheriae* strain on the other hand was inhibited by less than .78 mcgm of minocycline, doxycycline and tetracycline.

Clinical Additions:

A clinical study of minocycline in selected patients is now in progress in the Medical College of South Carolina. After informed patient consent, minocycline as an oral tablet (100 mg) is administered in an initial dose of 200 mg with a follow-up dose of 100 mg twice daily for a minimum of seven days, unless intolerance of the drug or evidence of toxicity necessitates its discontinuance. Appropriate bacterial cultures are obtained before, during and after therapy. A laboratory screen for evident drug toxicity is obtained as alluded to below.

Early clinical observations in 15 patients indicate satisfactory response in pneumococcal pneumonia (2 cases), *Klebsiella pneumoniae* (1 case), staphylococcal pyoderma (4 cases) and pneumococcal sinusitis (1 case) and a number of miscellaneous minor infections. Nausea was sufficiently severe to require discontinuing the drug in 3 patients. Weekly, complete blood counts, urinalysis and determinations of blood urea nitrogen, serum glutamic oxaloacetic transaminase, serum glutamic pyruvic transaminase, alkaline phosphatase and serum bilirubin were performed on most patients and with no evidence of hematologic, hepatic or renal toxicity. It is emphasized, however, that these studies are strictly preliminary and the small number of cases involved does not justify any general conclusion about this drug's clinical efficacy or toxicity.

Discussion

In vitro testing of *S. aureus* and *S. epidermidis* strains to tetracycline and the two analogues shows a definite superiority

for minocycline and doxycycline over tetracycline as bacteriostatic antistaphylococcal agents. None of the three drugs, however, demonstrated any bactericidal activity against staphylococci. Of interest is the fact that 17 tetracycline-resistant staphylococci proved exquisitely sensitive to both minocycline and doxycycline. In no case was the reverse true. Favorable response in 4 cases of staphylococcal pyoderma treated with minocycline correlated well with sensitivity demonstrated by tube testing.

Minocycline may have utility as a prophylactic agent in *N. meningitidis* outbreaks and should be further studied in these situations. All 11 strains tested *in vitro* showed excellent sensitivity to all three antibiotics. Four Group C sulfadiazine resistant strains from a military camp outbreak in the state proved very sensitive to all three antibiotics as did 3 Group A, 3 Group B and one other Group C strain, none of which was sulfadiazine insensitive.

Minocycline, tetracycline and doxycycline were ineffective *in vitro* against *Pseudomonas* and *Proteus* sp. as expected and against Gram negative bacteria generally, although two *Shigella* strains showed good sensitivity to all three antibiotics. Clinically, one patient with *Klebsiella pneumoniae* responded well to minocycline and predictably so since the infecting strain was quite sensitive *in vitro* to this antibiotic.

Minocycline and doxycycline, while exhibiting no activity for 5 strains of Group D streptococci and one strain each of *D. pneumoniae* and *L. monocytogenes*, demonstrated excellent activity against all other Gram positive organisms tested. It would appear from this limited study that both analogues of tetracycline are superior to tetracycline as antimicrobials for most Gram positive bacteria.

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LIVER DAMAGE CAUSED BY EXTRACTS OF "RATTLEBOX" SEEDS (CROTALARIA)

PART II

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In 1846 two astronomers, Adams in England and Leverrier in France, independently calculated by mathematics the existence and probable position of the planet Neptune. In this same year, Galle, a German astronomer, pointed his telescope to the calculated position and Neptune was discovered. This was not the first nor will it be the last case of scientific fact to be established following the formulation of a reasonable hypothesis.

In another paper in the May issue of this *Journal*, we have described preliminary results obtained from a study of more than 700 animals, many of which were dosed with a naturally occurring toxic substance. As a result of these and other observations, I have come to the conclusion that the toxin (a member of the pyrrolizidine alkaloid chemical series) may be a potent cause of human pathology, and in particular of human liver disease. In this short paper I will attempt to summarize some of the available evidence and to project a hypothetical clinical picture of poisoning by the pyrrolizidine alkaloid monocrotaline. An actual case of human poisoning due to monocrotaline has not yet been described.

Proven Facts

(Pertinent references to the literature have already been given in the first paper on *Crotalaria*.)

There are 50 or more pyrrolizidine alkaloids which occur in concentrations of up to three per cent as part of the sub-

stance of more than 2,00 widely distributed plant species.

The first case of poisoning by pyrrolizidine was recognized in 1884 in a domestic animal. The first case of human poisoning due to pyrrolizidine was described in 1923. Six human fatalities, overtly due to pyrrolizidine were described in 1951. In 1954, Bras et al introduced a new human clinical entity, "veno-occlusive disease of the liver," the etiology of which is now firmly linked with consumption of the pyrrolizidine alkaloid fulvine by man. Reports of poisoning by pyrrolizidine in man have come from at least ten countries.

The Eastern seaboard of the United States provides an ideal substrate for the growth of several pyrrolizidine-containing botanical species. The plant genus *Crotalaria* in particular is a well-recognized pest in the South Eastern states of America. In the western part of the continent, the hazard of pyrrolizidine-polluted cow's milk has been described, dramatically, in California.

Pyrrolizidine is an acutely lethal or sublethal cause of pathologic change. Its biologic effects have been compared with those consequent upon ionizing irradiation of living tissues. Like ionizing radiation, it affects many of the body systems.

A Hypothetical Human Case of Poisoning by the Pyrrolizidine Alkaloid Monocrotaline:

The patient is most likely to be a child.

Pyrrolizidine may have been taken by direct consumption of plant material. For example, *Crotalaria* bears an attractive yellow flower which has appeal to children. We also know that cow's milk, a popular infant food, can be contaminated by pyrrolizidine. Finally, pyrrolizidine can be given deliberately to the child as a purported treatment. This latter fact has been established in the West Indies, and it is an open question whether or not South Carolina "Root Doctors" employ pyrrolizidine-containing plants as lay "remedies."

In the absence of a clinical precedent, we must now transpose experimental results, obtained from studies of poisoned rats, to the hypothetical clinical situation.

The patient will be lethargic, cachectic, and will almost invariably display an enlarged, tender liver. Bloody ascites will develop in 50 per cent or more cases. Serious effusion may also be found in the pleural cavities. The patient may display loss of hair from parts of the body, and gastro-intestinal disturbances will demand treatment. A systemic blood dyscrasia will be evidenced by bright red bleeding from the mouth and/or rectum. Nasal bleeding may occur. Thrombotic episodes are to be anticipated, and in particular petechial hemorrhages and infarction of bowel segments are likely. Pulmonary complications will accompany the clinical course. Hemorrhagic consolidation of the lungs with pleural effusion may develop. This may proceed to cardiomegaly and to the state of "cor pulmonale."

Lymphocytic metaplasia is induced. The appearance of "plasma-type cells" in lymph nodes, and in the peripheral circulation should be looked for. Chronically, these "plasma cells" become phagocytic in function.

We suspect that depression of the platelet-count accompanies these other changes. We are sure that a bleeding diathesis will predominate in the clinical situation.

The degree of damage to the vital liver

and lungs decides the outcome of the clinical course. Patients may die of pulmonary insufficiency or they may survive to suffer the consequences of chronic liver cirrhosis. Icterus occurs late and might be regarded as a terminal sign in most instances of acute poisoning. An alternate terminal situation might involve massive hemorrhage from the gastro-intestinal tract.

Our research funds have been insufficient and we are unable to supply further diagnostic and prognostic advice concerning the state of pyrrolizidine poisoning, but we have obtained preliminary therapeutic knowledge.

Discussion:

A hypothetical new clinical entity has been described, namely-poisoning in man by pyrrolizidine alkaloid monocrotaline. Reports of human cases of poisoning by pyrrolizidine abound in the literature. Locally, we have to beware of the pyrrolizidine compound monocrotaline, which differs from fulvine and other alkaloids in this series in many of its biologic effects. To the best of my knowledge, no documented proven case of poisoning by monocrotaline in man has been described.

Therapeutically, we have had some success experimentally with treatment of monocrotaline poisoning by sulfur-containing amino acids. The amino acid methionine is now available in clinically acceptable preparations for both oral and intravenous use. It should be used whenever pyrrolizidine poisoning is suspected. Knowledge obtained from the literature supports this statement.

Negatively, we advise against the use of hyperbaric oxygenation for the attempted relief of the liver damage following poisoning by pyrrolizidine. We have found, experimentally, that high pressure oxygen accentuates the lethal potential of pyrrolizidine. This is consistent with the theory that pyrrolizidine alkaloids cause biological effects similar to those invoked by exposure to ionizing radiation.

TOXIC PSYCHOSIS FOLLOWING THE USE OF BENZTROPINE METHANESULFONATE (CONGENTIN)

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The use of benztropine methanesulfonate (Cogentin) for treatment of Parkinson's Disease has been common since its introduction in 1954. The drug has also been used to control the extrapyramidal side effects of phenothiazine therapy.

Benztrapine is an atropine-like drug which is related to the antihistamine diphenhydramine. It has anticholinergic, antihistaminic and local anesthetic actions. It blocks parasympathetic stimulation and does not produce central stimulation.

The side effects of dry mouth, blurring of vision, mydriasis, anorexia, constipation, ataxia, dizziness, fatigue, sleepiness and skin rash are well documented.¹⁻³ Another side effect, that of mental confusion, has been noted by several authors.¹⁻⁵ There have also been cases of toxic psychosis reported due to benztropine methanesulfonate.² Warnes reported nine cases of toxic psychosis due to antiparkinson drugs, six of which were due to benztropine.³ Jacobziner and Raybin¹ reported one case of psychosis in a child who accidentally ingested an unknown quantity of benztropine.

Pheiffer et al⁶ in a paper on the effect of acetylcholine inhibitors in producing hallucinations states that in 3 of 8 subjects taking 2 mg of benztropine, there were hallucinations resembling those seen with 25-50 mcg of LSD-25. Sigwald, et al⁷ report visual hallucinations in one of 45 patients treated with Cogentin.

In this paper we are reporting an additional case in which a toxic psychosis followed benztropine therapy.

Case Report

Miss D. B., age 17, was admitted with a diagnosis of adolescent adjustment reaction following a suicidal gesture. After becoming quite anxious and having symptoms suggestive of schizophrenia she was started on thioridazine 100 mg daily. This dose was increased to 200 mg daily after three days and there were symptoms of akathisia. Benztropine methanesulfonate 2 mg b.i.d. was added to her regimen. Within four hours she had become quite confused and was disoriented as to time and place. She began to have marked difficulty with speech. For the most part there was just a monotonous mumble, but occasionally there would be words or phrases which were clearly spoken. She had difficulty with perception of distance and would repeatedly walk into the wall. She would grasp at things in space which were non-existent and go through the motions of lighting a non-existent cigarette. She also demonstrated carphology, in which there were repeated episodes of picking motions involving imaginary objects on her clothing and bed linen. When walking she had a staggering gait. She displayed very labile emotions which varied from crying to laughing. There was also an episode of urinary incontinence with which the patient exhibited no apparent concern.

After discontinuation of benztropine, but continuation of thioridazine, the patient cleared rapidly. By 24 hours the psychotic state was no longer present. The patient was amnesic regarding much of the activity during the psychotic period.

Discussion

Toxic confusional states have been observed with numerous drugs used in the treatment of psychiatric illnesses. Where-

as phenothiazines have been reported to cause visual hallucinations, we should certainly be aware that patients who suddenly "deteriorate" while on phenothiazine therapy may be only reacting to the commonly used antiparkinsonian agent. We may also re-evaluate the practice some use of empirically starting a patient on phenothiazines and anti-parkinson drugs at the same time. Most pharmacologists state that side effects are more pronounced in elderly or arteriosclerotic pa-

tients. This patient was 17 years of age and those reported by Warnes were 32, 16, 20, 54, 53, and 59, a mean age of 36 years.

Summary

A case of toxic psychosis secondary to benztropine is presented. The ability of this drug to produce delirious states is emphasized. Caution should be exercised in use of this drug because of the risk of producing the psychotic state. Despite prior reports, age does not appear to be a major factor in this side effect.

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Parenteral Diazepam in Status Epilepticus—C. F. Nicol, J. C. Tutton, and B. H. Smith, *Neurology* 19:332-343 (April) 1969.

For a 27-month period, 42 patients who had had a total of 47 episodes of status epilepticus were treated with diazepam (Valium). The drug proved to be an effective and safe form of initial therapy for status epilepticus irrespective of type, presumed cause, or duration of seizure. In those patients where it failed, conventional forms of therapy also failed. Lingual obstruction was the sole serious adverse reaction encountered and was readily dealt with by means of an artificial airway. Significant alterations in blood and urine were not encountered.

PERMANENT PACING OF THE HEART

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After almost a decade of experience, the safety and effectiveness of implanted permanent pacemakers has become apparent. Although certain attitudes and methods continue to change, most of the principles of the use of pacemakers are well established.

Indications

At first the only indication for insertion of a permanent pacemaker was complete heart block with Stokes-Adams seizures. Today other arrhythmias (Table I) are also treated with permanent implants, because a reliable implantable standby (demand) pacemaker has been developed. This has extended the use of pacers to those conditions where competition between the pacemaker and naturally occurring beats is likely to occur.

Patients may survive many years with complete heart block with medical therapy alone, but most of them die suddenly within two to four years, presumably of a Stokes-Adams attack. Moreover, most patients with chronic complete atrio-ventricular heart block, who were "asymptomatic" before pacing, notice improvement in their sense of wellbeing after pacer implantation, presumably because of enhanced systemic blood flow. Therefore, as

a rule, most patients with complete heart block should be paced, whether they have Stokes-Adams or not.

Method

There are two approaches in implanting a pacemaker: transthoracic (or transdiaphragmatic) and transvenous. In one, the electrodes are sewn directly onto the heart muscle, and in the other they are placed in the heart via a suitable vein. We now use the transvenous method exclusively because the operation can be accomplished under local anesthesia and therefore may be performed even in bad risk and aged patients with but minor complications and morbidity, and less than 1% mortality, (Table II).

The pacer implant is done by a team, consisting of a cardiologist trained in heart catheterization, a surgeon, and an electronics technician. Under local anesthesia an electrode catheter is inserted through either cephalic or external jugular veins, and positioned in the apex of the right ventricle. The threshold for stimulation (excitation threshold) is measured with an external battery-powered pulse generator to confirm the satisfactory position of the electrode. (An excitation threshold above 0.9 to 1.0 milliamperes is unacceptable.) The catheter electrode is fixed in place in the vein and the power

Prepared by the South Carolina Heart Association for this Journal.

Table I

INDICATIONS FOR PERMANENT PACEMAKER IMPLANTATION

1. Complete atrio-ventricular heart block especially with Stokes-Adams episodes
2. Symptomatic bradycardias
 - Atrial fibrillation with high degree atrio-ventricular block
 - Sinus arrest
 - Digitalis induced bradycardia
 - Intermittent high degree atrio-ventricular heart block
3. Persistent tachycarrhythmias
4. Left axis deviation and right bundle branch block suggestive of bilateral bundle branch block (possible indication)

Table II
MORTALITY FOLLOWING PACEMAKER IMPLANTATION

	Complete Operations	Number of Patients	Number of Operative Deaths
Transthoracic (including trans-diaphragmatic)	85	74*	2 (2.5%)
Transvenous	199	174**	2 1.0%)
Totals	284	248***	4 (1.5%)

*Including 1 converted from transvenous and 4 converted from transthoracic to transdiaphragmatic.

**Including 15 converted from transthoracic.

***20 patients counted twice.

pack is implanted in a subcutaneous pocket in the upper chest wall. The patient is ambulatory in a day or two and ready for discharge within a week.

Complications with this method occur in 10% of cases. Included in this figure are component and battery failures. Other complications can be avoided or reduced by proper attention to implantation techniques. For example, broken leads can be prevented by proper handling of the electrodes and by placing the pulse generator in the pectoral position where there is little flexing of the wires. Electrode dislodgement can be prevented by fixing the electrode well into the vein, and by positioning it at the very apex of the right ventricle.

A rise in excitation threshold above the output of the pacemaker (exit block) occurs if the electrode becomes separated from the myocardium by scar tissue as a result of poor initial placement, secondary infection, or perforation of the heart. Careful attention to details has almost eliminated these problems.

Preliminary Transvenous Pacing

Although it is tempting to insert a permanent pacemaker as a primary opera-

tion, preliminary transvenous pacing is the rule at this institution. A temporary bipolar electrode is inserted through a suitable vein (external jugular, antecubital, femoral or saphenous) into the outflow tract or the apex of the right ventricle. Immediate control of ventricular rate is thereby achieved. Definitive implantation can therefore be done electively, and anesthesia, if needed, can be employed with safety.

Pacing Mode

Three modes of pacemakers are available: fixed rate, P-wave synchronous, and standby. The fixed rate pacer fires at a constant rate which may in some models be altered by external manipulation. The P-wave synchronous pacer rate is determined by the sinus node rate. It is commercially available only for implantation by thoracotomy, not pervenously. The standby or demand pacer fires when the spontaneous rate falls below a preset level. Fixed rate pacing has the advantage of being well tested by time. It is reliable and likely to last three or more years, and therefore is still the method of choice in many clinics.

There is evidence, however, that fixed

Table III
SELECTION OF MODE OF PACING

Situation	Type of Pacer	Rationale
I. First insertion		
A. Patient in fixed block	Standby	To avoid competition in those patients that revert to regular sinus rhythm (30-50%).
B. Intermittent block	Standby	
II. Return to regular sinus rhythm in patients with fixed pacer	Standby	To avoid competition in all patients.
III. Elective change of pacemaker in patients with fixed complete block and no evidence of competition	Fixed rate	To avoid competition. Return to regular sinus rhythm and competition unlikely after 3 years.

rate pacing may be dangerous in those patients who have "competition" between spontaneous and paced cardiac complexes. Fatal ventricular fibrillation can occur from stimulation of the heart by the pacemaker when the stimulus falls at the apex of the preceding T wave. Although at most times the paced human heart may be relatively insensitive to competition, the fibrillation threshold may be lowered by anoxia, digitalis, or electrolyte imbalance. In such situations, competition can produce repetitive rhythms and ventricular fibrillation.

There are now numerous reports of unexplained sudden deaths in paced patients. Eleven sudden deaths have occurred in our series of 228 patients; ten of these patients were paced with fixed rate pacemakers in the presence of competition.

The standby pacemaker fixes effective stimuli only when the spontaneous heart rate falls below preset limits. It thus avoids the dangers of competition and is displacing the fixed rate pacer in many institutions.

Follow Up

Experience with a follow-up clinic has shown that the best way to determine when to change the pacemaker is to analyze the expanded electric impulse (artifact) of the pacemaker. Changes in the pulse rate, and the height, duration, and contour of the artifact, may indicate that pacemaker failure is impending. Seventy-five percent of changes in our clinic have been elective as a result of such an analysis. The use of a computer facilitates this type of study.

Future

Batteries in existing pacemakers last from two to four years, depending upon the model. The longest life of any pacemaker in our series was 47 months. The electrodes and wire leads, on the other hand, last much longer. Therefore, the most important advance in the future will be an improved power source. This may be in the form of a radioisotope generator now under development. There have also been changes in electrode design that may significantly reduce power requirements and thus increase battery life.

The Broad Concept of Sterile Technique. W. H. Prieleau (Charleston) Surg Gynec Obstet, 128:115, 1969.

The common practice of meeting only the technical requirements of the individual case or specialty is a potential source of cross contamination and the establishment of reservoirs of pathogenic organisms endangering subsequent patients and other departments of the hospital. There should be generally adopted a broad concept in which sterile technic has the dual purpose of protecting not only the patient at hand but also subsequent ones.

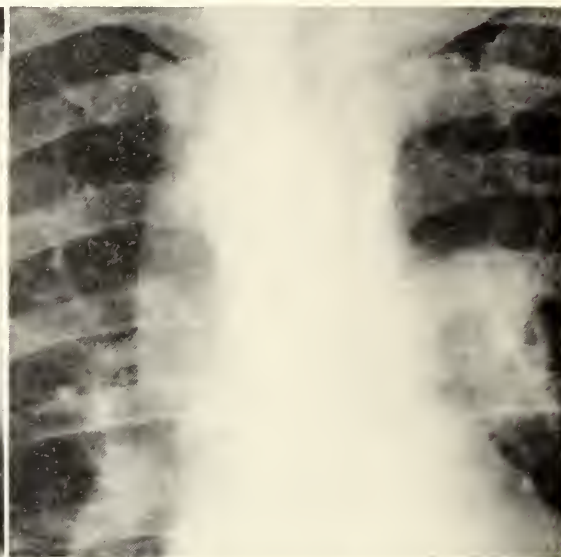
X-RAY FILMS OF THE MONTH

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1. PA Chest



2. Blown Up View Mediastinum

This PA film of the chest with blown-up view of the upper mediastinum was taken on a 37 year old white male as a routine procedure prior to an elective hernia operation. The patient had no chest complaints, specifically denying cough, sputum, choking sensation, swallowing difficulty or shortness of breath.

A right mediastinal mass is present above the right hilum of the lung. It is due to a right sided aortic arch.

Right sided aortic arches are significant, first in that they may be mistaken for a tumor of the mediastinum. Probably the most primary decision that a radiologist has to make in dealing with a mediastinal lesion is whether it is vascular in nature. At times, this will require an aortagram. By barium swallow, it also should be determined whether a mediastinal tumor is related to the esophagus. Beyond this, diagnosis of tumors of the mediastinum becomes a somewhat statistical guessing game made scientific by the location of the tumor, type of associated cal-

cification, results of thyroid scans and the patient's clinical picture.

Once a right sided aortic arch is recognized for what it is, by correlation with the clinical picture, one may predict the arrangement of the major vessels of the arch and whether the esophagus will be displaced.^{1,2} In one group, the patients have congenital heart disease. A second group has a vascular ring which, however, is usually asymptomatic.

The right side aortic arch associated with congenital heart disease has a mirror image of normal type of branching of the major vessels. It is most often seen with tetralogy of Fallot, second often with truncus arteriosus. This type of right aortic arch produces little compression or deviation of the esophagus.

A second type of right aortic arch has the left sub-clavian artery as the last vessel to arise. As the proximal portion of this vessel is formed by what would have been the posterior portion of the left aortic arch, this area of the vessel is usually bulbous. It indents the esophagus on its

posterior aspect quite noticeably. Also, there is almost always a left ductus arteriosus present, producing a vascular ring. Only occasionally is the vascular ring symptomatic, the critical period seeming to be in infancy and early child-

hood.

The patient described above of course had the latter type of aortic arch. While the patient was alive, it did produce quite noticeable forward deviation of the esophagus, but never caused any complaints.

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Tick Paralysis in British Columbia—N. Schmitt, E. J. Bowmer, and J. D. Gregson, *Canad Med Assoc J* 100:417-421 (March 1) 1969.

Tick paralysis occurs commonly in the interior of British Columbia where the wood tick *Dermacentor andersoni* is prevalent. Three hundred and five cases with 30 deaths were recorded between 1900 and 1968. Small children were particularly likely to be paralyzed. The case fatality rate for children under 16 years of age during the period 1928 to 1968 was 12.8%. While more girls than boys contracted the disease, more men than women were victims; these differences in sex distribution as affecting children and adults were statistically highly significant. Ticks were attached to the head and neck in 70% of the patients but may be found on any part of the body. In this age of rapid travel, a patient "incubating" tick paralysis may be carried far beyond the boundaries of endemic areas; physicians outside such areas should include tick paralysis in the differential diagnosis of unexplained ascending lower motor neuron disease.

Editorials

American College of Emergency Physicians

Every new subdivision of medical service engenders its own organization. The title above indicates the newest of these bodies which have arisen from the splintering process now active in medicine.

These subspecialties no doubt need the benefits of conversation and solidarity that come from an active group of their members. Nineteen states have already joined in the College named above. Dr. Eugene M. Baker of Columbia represents South Carolina.

Now that emergency rooms have in most instances become around-the-clock clinics which provide convenience to a mixed clientele rather than true emergency service, it appears that a new type of physician-surgeon has arisen to take care of the multiple and varied complaints heard in the emergency room. This seems almost like a reversal to the old role of the general practitioner. After all, it is rather hard to see why the emergency man would not be happy in the grand old name of "physician," without indicating that he cares only for "emergencies," however they may be interpreted.

Blue Shield Goes British

Apologists for Britain's National Health Services might take thought in observing how private organizations financing health care are growing in England. It is obvious that the field of private medicine continues to grow in Great Britain because it offers advantages which the state medicine lacks. These advantages include the freedom of choice of the doctor and the place, the privacy, the absence of formal visiting hours and the speed of treatment, all of which things are lacking under the national system. It appears that the private sector of British physicians will again play a more and more significant role in health services.

Consonant with this trend is the recent affiliation of the British United Provident Association (BUPA) with the National Association of Blue Shield Plans.

Fee Fixing

Sanctimonious promises from HEW that the physician's fees would be inviolable under Medicare and such plans seem to be as misleading as many other pronouncements under the program. On July 1 recipients of the largess of Medicaid will be treated by physicians on a fee schedule equivalent to the local Blue Shield schedule. Granting this is usually fair and no great reduction in ordinary fees, a schedule of fixed fees takes no cognizance of the many variables in the various parts of the country. At the same time payments to hospitals have been reduced without consultation or opportunity for agreement. The AMA has offered to confer on the matter with officials of HEW but no response has been made. What next?

The Drug Industry

The efforts of governmental agencies to put pressure on the pharmaceutical industry have become a rather familiar and depressing story. The government has been free in its asseverations concerning the integrity of both manufacturer and physician, charging excessive gouging to the former and uncontrolled prescribing to the latter. The long hearings which have been held appear to be seriously biased, giving little opportunity to spokesmen for the industry or the profession to offer refutation of damaging charges by federal officials and their henchmen. The industry has fought a good fight and continues to work fervently for a better governmental approach to its grievances. Since both druggists and physicians have extremely important interests in what

happens, it seems that both of these groups could expend a little more energy in supporting the struggle of the pharmaceutical industry. Arguments from both

of these sources would be effective methods for combating the rather extravagant claims made by the government.

50 YEARS AGO



June 1919

An editorial discussed the excellent qualifications of Dr. E. W. Pressly of Clover for the presidency of the Association. Influenza was still very much in mind and an article on Influenza Pneumonia was contributed by Dr. T. L. W. Bailey of Clinton.

Minutes of Called Meeting of Council of the South Carolina Medical Association

Sunday, April 27, 1969, 2:30 P.M.

A called meeting of the Council of the South Carolina Medical Association was held Sunday, April 27, 1969, at the Blue Cross-Blue Shield headquarters in Columbia at 2:30 P.M. The following members were present:

John P. Booker, M.D., J. H. Atwill, Jr., M.D., J. Hal Jameson, M.D., William L. Perry, M.D., J. Howard Stokes, M.D., Thomas Parker, M.D., Waitus O. Tanner, M.D., Harold P. Hope, M.D., Michael Holmes, M.D., D. Strother Pope, M.D., Mr. M. L. Meadors, Joel Wyman, M.D.

Also in attendance were:

Senator Frank C. Owens, W. W. King, Sr., M. D., Chairman, Executive Committee, State Board of Health, E. Kenneth Aycock, M. D., State Health Officer.

Dr. John P. Booker, Chairman of Council, presided. The invocation was given by Dr. Thomas Parker.

Mr. Meadors stated that the purpose of the Called Meeting was to discuss House

Bill 1524, which, in essence, will do away with the State Board of Health, the State Department of Public Welfare, and the Executive Committee of the State Board of Health as they now exist; and create the South Carolina Board of Public Health and Social Services, with the Chairman to be appointed by the Governor from the State at large. Mr. Meadors further explained that when the Bill was first introduced, it provided that a seven member Board be created, and the Chief Administrator would have been the head of the State Department of Public Welfare. Since that time, the Committee which introduced the Bill has reversed its position on the order of importance, and is planning to propose that the State Health Officer be the head of the new Department.

Dr. Wyman King, Chairman of the Executive Committee of the State Board of Health, Dr. E. K. Aycock, State Health Officer, and Senator Owens briefed the group on the background, ramification,

and changes in the proposal.

Senator Owens commented that a more recent draft of the proposal does not give the State Health Officer as much power as the proposal read by Mr. Meadors. He added that in the redrafted proposal there is no provision which states that a doctor will be a member of the Board of Public Health and Social Services, or the new board to be created. He added that he would like to put in an amendment which would require that four out of the seven man Board be doctors licensed to practice medicine, or, that four doctor members be added to the Board. He stated that he would also try to see that the redrafted proposal include that portion of the proposal Mr. Meadors referred to regarding the State Health Officer being head of the new Department.

There was general discussion from all members concerning what position Council should take on this matter. Because of the responsibility of the Medical Association for public health, the course of action which should be recommended concerning the proposal which will be submitted on Tuesday is of vital importance to the State of South Carolina and to the South Carolina Medical Association.

Dr. J. H. Atwill moved that we make it clear that public health is the primary interest of the Medical Association, and that in the constitution of the new Board of Public Health and Social Services, we would like to see organized Medicine represented in the form of three members of the seven member Committee. The motion was seconded by Dr. Holmes. After further discussion Dr. Atwill amended the latter part of his motion to the effect that three licensed physicians in active practice be included on the new Board of Public Health and Social Services. Dr. Holmes was agreeable to the amendment, and the motion as amended was voted on and carried in the affirmative.

Senator Owens also briefed the group on a Bill which has been introduced before the House by a group of Chiropractors which would make it compulsory that a

Chiropractor be seated as a member of the Technical Advisory Committee to the Radiological Control Center. There was discussion from the group, followed by a motion by Dr. J. H. Atwill, Jr., that Council of the South Carolina Medical Association oppose the compulsory seating of a Chiropractor on this Committee. The motion was seconded by Dr. Tanner, and carried in the affirmative.

Senator Owens commented on the current legislation concerning Osteopaths being licensed to practice in South Carolina. This Bill has passed the second reading. There was discussion from the floor concerning Osteopathic legislation in other states, how the Examining Board would be constituted, and the fact that the American Medical Association has recommended that Osteopaths be admitted to medical societies and to practice in hospitals. Dr. Waitus Tanner noted that the recommendation of the American Medical Association is temporary until the Constitution of the American Medical Association is changed. He stated that the matter will be brought up at the American Medical Association Meeting in July, and pointed out that a two-thirds vote is necessary to change the Constitution. He indicated some doubt as to whether the change would actually be made. Dr. Howard Stokes suggested that we try to hold this legislation in committee until the annual meeting of the South Carolina Medical Association, at which time we will know more about the status of the osteopathic legislation. All members of the group concurred that this would be the wisest course of action if the matter could be held in committee (Senate Medical Affairs).

Dr. Pope moved that Council express its appreciation to Senator Owens, Dr. King and Dr. Aycock for their contribution to the meeting. Appreciation was expressed by the Chairman, Dr. Booker, and these physicians departed from the meeting hall.

Dr. Booker inquired of the group if Mr. Meadors should make the expression from Council (regarding the State Board of Health and Department of Public Wel-

fare) at the hearing on Tuesday. Mr. Meadors stated that he felt it would be better if the President, Dr. Joel Wyman, made the presentation. The entire group concurred in this opinion, and Dr. Wyman agreed to appear at the hearing on behalf of the Council of the South Carolina Medi-

cal Association on Tuesday.

On motion of Dr. Joel Wyman, the meeting adjourned.

Respectfully submitted,
Dr. Strother Pope, M.D.
Secretary



BENJAMIN N. MILLER, M.D.
SCMA PRESIDENT-ELECT

Dr. B. N. Miller of Columbia was graduated from Duke Medical School in 1935. He served his residency at Duke Hospital and later was instructor at the University of Alabama Medical School. Since that time he has been engaged in the private practice of internal medicine in Columbia.

Dr. Miller is a fellow of the American College of Physicians, a fellow of the American College of Allergists, and a fellow of the American Academy of Allergy. He is a past president of the South Carolina Society of Internal Medicine, a past president of the Columbia Medical Society, a past president of the Southeastern Allergy Association and for many years served as secretary of the South Carolina Medical Association.

SOUTH CAROLINA MEDICAL ASSOCIATION

REPORTS OF COMMITTEES

Received too late for publication in April.

Committee On Alcohol and Drug Addiction

The Committee on Alcohol and Drug Addiction has been quite active during the past calendar year. We presented a Resolution to Council confirming our support of the Implied Consent Law, which was approved, and our support of this Bill was read to the Legislative Committee on this Bill.

Our members have been active in participating in various programs throughout the state.

Dr. McCurdy and Dr. Hall were added to our Committee.

The Committee has been cooperating with Dr. Bonner in the Scientific Program for the May Scientific Session, and will participate in the presentation of pertinent clinical papers on the management of alcoholism in the afternoon session on May 14th.

We continue to be active in urging general hospital care of the acute and chronic alcoholic.

Dr. Robert S. Solomon, Chairman

Committee On Medical Aspects Of Sports

The main work of this committee is the presentation of an annual conference on the medical aspects of sports. The Fourth Annual Conference was held at the Citadel on March 13, 1969. Through lack of early information from the Association office, physician attendance was somewhat low. We did have good overall attendance, however, with a total registration of 69. Fifteen of these were physicians and 54 coaches, trainers and physical educators.

Most of the work for the Fourth Annual Conference at the Citadel must be credited to our former committee member, Dr. C. C. Wannamaker, of North Charleston. An excellent program for both athletic team physicians as well as coaches and trainers was presented. The staffs of both the Medical College and the Citadel were used freely. The areas of diagnosis, treatment and prevention of athletic injuries were covered along with disease compatibility with athletics and proper conditioning methods.

The subject of athletic medicine as an organized entity has, over the past 10 years, gained a prominent level of interest with the medical profession. It is the strong belief of this committee and a large number of our colleagues that subjects in this area of interest should be included in the clinical program of the annual meeting of the South Carolina

Medical Association. It is our hope that this can be accomplished in the near future.

Dr. Judson E. Hair, Chairman

Committee On Mental Retardation

The Committee on Mental Retardation of the South Carolina Medical Association met at the South Carolina Retarded Childrens Habilitation Center on March 19, 1969. Members of the Committee present were the Chairman and Dr. Bruce Ford. After a delightful luncheon and personally conducted tour by Dr. Bert Cercenia, a short meeting of the Committee was held. Drs. Allen Leiberman and John R. Paul were also present and entered into the discussions.

It was decided that we recommend the establishment of more centers similar to the Mosley Habilitation Center throughout the State for more efficient and quicker evaluation of retarded children. It was also felt that additional facilities for the outpatient care of these patients should be established.

B. Owen Ravenel, M.D., Chairman

Committee On Eye Bank

As of March 14, 1969 there are 9,165 persons in the state who have willed their eyes for use in the Eye-Bank's program of sight restoration and conservation. This is an increase of 1,681 donors over last year.

Since May 1, 1968, the Eye-Bank has handled a total of 65 eyes. Of this number 28 came from South Carolina donors and 37 from eye-banks in other states for use by South Carolina doctors. Forty-five corneal transplant operations were performed and 20 eyes were used for research.

The Annual Meeting of the Eye-Bank was scheduled for April 29, 1969, with Mr. James J. Lawlor, Executive Director of the International Eye Foundation, Washington, D. C., as the principal speaker. Mr. Lawlor travels extensively over the world on behalf of the I.E.F. and his remarks should be extremely interesting and informative.

The people-to-people program of the I.E.F. is three-fold:

1. Exchange fellowships of three months to one year.
2. Surgical-teaching teams to up-grade eye care and initiate eye-banks.
3. Visiting professors on short-term assignments at hospitals and medical schools.

Since its beginning in 1961, over 100 American doctors have served in 36 countries, teaching and operating under the sponsorship of the I.E.F. Over 200 foreign ophthalmologists have been brought to Washington to study the latest surgical techniques and eye-bank procedures.

Dr. John H. Young, Chairman

Industrial Medicine Committee

The Industrial Medicine Committee of the South Carolina Medical Association met at the Blue Cross—

Blue Shield office in Columbia, S. C. at 1:30 P.M., February 26, 1969, following a luncheon meeting there.

Present were the Chairman, Dr. J. Hal Jameson, Vice Chairman, Dr. Allen Slone, Dr. Leon Poole and Dr. Dexter M. Evans, Jr. Also Dr. Everett Hughes, successor to Dr. Harold Jervey as Medical Advisor to the S. C. Industrial Commission.

The meeting was opened with the election of officers. Dr. Slone was elected Chairman, Dr. Poole Vice Chairman and Dr. Evans was reelected Secretary.

Dr. Hughes made a few remarks concerning his position and stated that he would gladly help us in any way he could.

Dr. Jameson stated that new medical forms for the Industrial Compensation cases are now available upon request. He also said that he had been in touch with Mr. Paul McMillan, and the annual meeting of the Committee with the Industrial Commission would probably be in March or April. Dr. Slone suggested that we discuss three particular points with the Commission: first, get their feelings about the establishment of a customary fee schedule such as Medicare, Medicaid, BC-BS and many other insurance companies now use; second, Dr. Hughes suggested that a workshop be held for medical secretaries concerning the proper way to fill out the industrial commission forms, to assure the physician the maximum benefit for each injury. Dr. Hughes said he would gladly hold these meetings if they could be worked out and approved by the Commission. In many areas there is much misunderstanding as to the proper use of the new fee scale manual. The third topic was to get the Commission's feelings about Dr. Hughes reviewing the medical information in industrial cases that were appealed.

It was also suggested that our committee attempt to have a meeting with the Industrial Commission, either the next meeting or the one after that. It would be an evening meeting, with the Committee entertaining the Commission, having dinner in a very informal and social meeting later. It was felt that if we could get the Commissioners out of formal surroundings of their offices and to a leisurely meeting, then greater rapport could be established and consequently the work of our committee could be greatly improved.

Dexter M. Evans, M.D., Secretary

Committee on Medical Education

At a meeting of the Council of the South Carolina Medical Association on October 16, 1968, a resolution was adopted authorizing the Committee on Medical Education to appoint instructors in cardiopulmonary resuscitation at seminars conducted by the South Carolina Heart Association throughout the state.

The Heart Association conducted a CPR program in Greenville last fall, which was well attended by

physicians from the upper part of the state. Another seminar is planned for May 30 and 31st of this year, to be held in Charleston. Dr. Archer Gordon, Chairman of the American Heart Association Committee on CPR, will be guest speaker, and an extensive course for instructors is planned. We are very anxious to obtain at least one physician from each county in the state to attend this program and be able to return and act as instructor in his local area. After interviewing a number of physicians in different parts of the state, it seemed apparent that their reluctance to participate was based on a feeling that this might not be condoned by their local medical society. Since one of the functions of the Medical Education Committee is to promote interest in medical and para-medical areas of education, it would seem appropriate that the attendance of such seminars should be encouraged by the Committee. Therefore, we request that the County Medical Associations discuss this at their next meeting, where they may either ask for volunteers or appoint a physician or groups of physicians to act as instructors in their local communities.

The CPR Committee of the Heart Association is glad to cooperate with any details, and since the next seminar is in May, we are most anxious to designate the instructors as discussed above.

Dr. Thomas E. Hair, Jr., Chairman

Sub-Committee on Emergency Medical Care

The function of this subcommittee is to study and make recommendations concerning emergency medical care in South Carolina. This study includes medical and surgical emergencies from the site of the emergency to the hospital emergency unit, and the care given the patient in the emergency unit itself. It includes disaster care which involves community or state facilities. Accident prevention is not studied.

For reporting purposes emergency medical care is divided into three categories: (A) Initial Care, (B) Emergency Unit Care, (C) Disaster Care.

A. Initial Care—The Subcommittee recommends that:

1. Each county medical society promote and encourage the "Medical Self-Help Training Program" in high schools, colleges, technical schools, churches and clubs, as offered by the State Board of Health and the State Civil Defense Agency.
2. The House of Delegates recommend to the State Superintendent of Education that this course be

taught in high schools and technical schools and that one-half credit be considered for completion.

3. Each county medical society establish an emergency care committee to plan for initial care, coordination and establishment of a communication system, traffic control recommendations, ambulance personnel training program, and adoption of a model ambulance ordinance.

B. That consideration of hospital emergency unit problems include the following:

1. A central emergency unit for a community with two or more hospitals.
2. Selection of the best of various methods of physician coverage.
3. Appointment of emergency unit committees.
4. Utilization of emergency care literature, training films and other aids.

C. Disaster Care:

1. Closer cooperation of the health mobilization division of the State Board of Health and the State Civil Defense Agency in storage and utilization of the package disaster hospitals and training of personnel to operate them.
2. That two or more of these package emergency hospital units be made highly mobile for immediate transfer and use to any part of the state when necessary, and that the S. C. State Board of Health, health mobilization division, develop a specific plan to implement this recommendation.
3. That intensive use of the training units be made at county and state levels, with demonstrations at public and educational functions.
4. Encourage the "Medical Self-Help Training Program" as stated in paragraph A-1.
5. Sponsor the development of an inter-hospital communications system throughout the state by the Civil Defense Agency.
6. Encourage development of mobile teams with suitable equipment in each of the hospitals having emergency unit facilities for the purpose of attending casualties at the site of accident or disaster.

General Recommendations:

1. That each county medical society delegate report annually by January first to this emergency medical care committee the status of initial care, emergency room and disaster plans.
2. That all local emergency plans include natural and thermonuclear disasters.

Respectfully submitted,

Edmund R. Taylor, M.D., Chairman

QUIDNUNC

Social Characteristics and Patient Expectations Toward Mental Hospitalization. Arch Gen Psychiat 20:457-469 (April) 1969.

Send your mind to the hospital and leave that old body at home?

BLUE CROSS—BLUE SHIELD

PRESIDENT'S MESSAGE

Doctors founded the Blue Shield movement 40 years ago, and under the guidance of the medical profession, it has grown to become the largest single source of payment in private practice today. Blue Shield is now mature and strong in a dual role—as the prepayment agency for the public, and as trustee for all physicians.

In this time of immense economic and social pressures, Blue Shield has emerged as the only private agency created by doctors to demonstrate that a free medical profession is best able to meet the needs of the public. By continually upgrading coverage from the old, inadequate levels of the lowest fee schedules, Blue Shield has closed a big part of the gap in financing private medical care for all economic classes of people.

Critics of the medical profession assert that physicians are charging exorbitant fees. But the members of the South Carolina Medical Association, along with their Blue Shield Plan, have proved that it isn't so. At the end of 1968, for example, the U. S. Department of Labor announced that medical care costs had gone up 6.2 per cent, and that this played a key role in a 4.7 per cent increase in the Consumer Price Index. Your Blue Shield records disclose, however, that physicians' fees in South Carolina rose *no more* in 1968 than did the cost of living. Thus, physicians in this state generally endured inflation in the economy, without contributing to its escalation.

My report on the stewardship of Blue Shield of South Carolina during the year 1968 is a report on the best year of operations in the Plan's history. Blue Shield payments to doctors amounted to more than \$4.8 million, more than in any preceding year. The plan experienced a small net operating loss, but this was a calculated effort to reduce somewhat the unallocated surplus figure which the Board felt had reached a disproportionate level.

The dominant influence upon Blue Shield during the year was resurgent public confidence in the medical prepayment system. The Plan achieved its greatest membership growth in more than a decade.

Throughout the United States, Puerto Rico, and Canada, Blue Shield membership climbed more than 2,300,000 despite the loss of almost 740,000 members in British Columbia who were lost to the Canadian socialization of medicine. Total Blue Shield membership in this hemisphere reached nearly 65,000,000 with a growth rate of 3.7 per cent.

Blue Shield of South Carolina did much better, with a growth rate of 11.2 per cent in contracts and 11.3 per cent in membership. The 1968 gain of 35,571 members brought the year-end membership to 358,267.

Among the 21 Plans in the same size category

(100,000 to 500,000 members), only three were able to match the South Carolina growth rate. The regional average was barely more than one-half as good.

Blue Shield of South Carolina attributes its excellent rate of enrollment to the emphasis on higher fee schedules and payment of a larger share of the physician's bills. And, in turn, we regard it as further evidence of higher public confidence in prepaid, private medical care.

Along with the implementation of higher benefit levels for thousands of members, and the enrollment of tens of thousands of new members, your Blue Shield in 1968 conducted intensive studies and consultations with the State Insurance Department, in the planning for even broader health care coverage in South Carolina in 1969 and 1970. The long-awaited usual and customary fee program has become a reality, along with our own new Major Medical contract.

MEDICARE

During 1968, the Social Security Administration renewed the contract under which Blue Shield of South Carolina administers Part B of Medicare. And the Plan made payment of more than \$8.7 million for medical services to the over-65.

The Medicare claims review department was strengthened and improved during the year, and Blue Shield staff extended more assistance to doctors in the field of utilization review. The lag-time in processing of Part B claims was reduced, and most Medicare payments to physicians were made within 15 days of the receipt of claims.

Higher volume, bringing about an increased use of electronic data processing, resulted in better identification of usual, customary and prevailing fees. Only one-half of one per cent of Part B claims were denied, and then only after review by the Medical Review Committee. As your Part B carrier, Blue Shield paid nearly 180,000 claims in 1968 and, in 97 per cent of those claims, the physician's full charge was allowed as the reasonable charge.

Again this year, as last, I desire to express my appreciation to both the lay and professional members of the Board of Directors of Blue Shield of South Carolina, and to the Blue Shield staff, for the excellent work they continue to do. And on behalf of more than one-half million South Carolinians served by your Blue Shield plan, I desire to express our appreciation to the South Carolina Medical Association for its increased participation and support.

Respectfully submitted,
J. HAL JAMESON, M.D.
President
Blue Shield of South Carolina

Excerpts From Gov. Robert McNair's Address At SCMA Banquet

South Carolina must upgrade its medical education facilities and "... not let them fall victim to dissidents who are insensitive to the urgency of our needs," Gov. Robert E. McNair said in his address at the annual banquet of the S. C. Med. Assoc.

He cited the need for more doctors, dentists, nurses and other medical personnel. He reviewed the necessity of merging the state departments of health and public welfare into a single agency.

McNair said comprehensive health planning is essential to the health and welfare of its citizens.

"There must never be another time when we can point to a certain income level, or a certain age group, or a certain geographic location, admit that its access to health programs is deficient. The right to a full and healthy life should not be limited by income, education level or geographic location," he said.

"The irony of the present dilemma facing South Carolina is that those who are in most need of health care today often have least access to it," he said.

In the last 10 years there has been an increased concentration of medical personnel and facilities in the urban areas leaving the rural areas worse off than before. In 27 of the state's 46 counties there has been a decrease in the number of doctors, per capita.

"In one South Carolina County, there is only one physician for every 7,700 persons and several others have only one per 4,000 people," he explained.

"Unless we are to turn our backs on these areas, we must move in with our full resources of health services, education, job training, industrial programs and whatever other resources are at our command," he added.

The state must bring health care down to the

local level in those rural areas which are deficient in medical facilities.

"It will be feasible for us to establish across the state regional comprehensive health and information centers, where persons in need of help can get on-stop service or referral information," he said.

The functions of the short term general hospital from the long term facility must be separated and "... we must understand the role of the nursing home and the home health care program."

"It is time our hospitals must be improved and expanded and not closed down so that our limited medical facilities shrink even further," he said.

"It is a time when we must upgrade our medical education facilities and not let them fall victim to dissidents who are insensitive to the urgency of our needs. Every day of deepening strife only delays and makes more difficult the task ahead of us at the Medical College of South Carolina," he charged.

Unless the state can extend vital health services to all South Carolinians, then its chances of moving ahead in the race for economic leadership are dim.

"If comprehensive health planning is to have any meaning in South Carolina, it must cut across the rigid lines of agency jurisdiction; it must cut across the uncertainties which exist between the public and private sectors, and it must involve the active participation of the professional and layman alike. Agencies must do more than give lip service to coordination; they must actively exchange services and share in the experience of extending total health care to the individual. Professionals in both the public and private sector must be more than competent; they must be responsive and aggressive in attacking the health problems of our state," McNair said.



"Where Medical care is sought, and is to be provided, no matter who the people involved are, no matter how superb the planning that brings them together, no matter how reliable the facilities, no matter how well-trained the supporting personnel, and no matter how sophisticated the delivery system may be; if anything or anybody comes between the patient and

his physician, the effectiveness of that care is reduced, and might even be obliterated."

President, Am. Med. Assoc.
Dwight L. Wilbur, M.D.,

SCALPEL and AMPAC strive to help elect a congress who will help to preserve this system.

JOIN TODAY



Dr. Karl V. Daskocil, director of professional services at the S. C. State Hospital in Columbia, has been appointed superintendent of the hospital. He succeeds **Dr. William Hall**, state commissioner of mental health. Dr. Hall has been serving both as superintendent and also as state commissioner, a position to which he will now devote full time. **Dr. Charles P. Summerall III** of Charleston has been installed as president-elect of the South Carolina Heart Assn. Also installed at the annual meeting were **Dr. Donald E. Saunders Jr.** of Columbia, president; and **Dr. D. Glenn Askins Jr.** of Marion, vice president. A portrait of the late **Dr. Alexander M. Redfern**, Clemson University's first physician, was unveiled by members of his family at dedication ceremonies for the university's new student health center, which will bear the name of the late physician. **Dr. J. V. Jeffords**, Spartanburg physician and president-elect of S. C. Tuberculosis and Respiratory Disease Assn., spoke recently at a meeting of the Broad River TB-RD Assn., Spartanburg. Greenville's first sui-

cide prevention and crisis intervention service is scheduled to open on a 24-hour-a-day basis on June 1, under the direction of **Dr. Kenneth Warren** of the Greenville County Mental Health Center. **Dr. Richard W. Hanckel** has been named president-elect of the American Broncho-Esophagological Assn. **Dr. F. Johnson Putney**, also of Charleston, was re-elected editor and historian of the transactions of the American Laryngological Assn. **Dr. Francis P. Champion** of Spartanburg has been re-elected to active membership in the American Academy of General Practice. **Dr. William W. Duke** of Lancaster has been elected to fellowship in the American College of Physicians.

Dr. Vince Moseley of Charleston has recently received recognition by two groups. The American College of Physicians elected him governor for S. C. at the organization's annual meeting in Chicago in April. Later in April the S. C. Association for Mental Retardation honored him at a meeting at Clemson University.

MEETINGS

The American College of Physicians will present Clinical Gerontology August 21-23, 1969 at the Shoreham Hotel, Washington, D. C. The presentation is being sponsored by the University of California, Los Angeles.

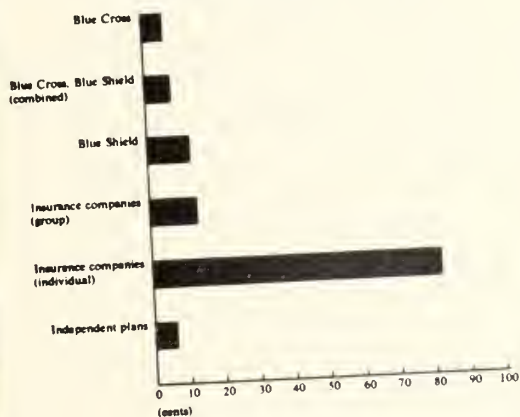
A Postgraduate Obstetric-Pediatric Seminar will be held in Fort Lauderdale, Fla., August 21-23. For more information about the seminar write to Dr. Hilla Sheriff, S. C. State Board of Health, J. Marion Sims Building, Columbia, S. C. 29201.

Memo from BILL SANDOW

One out of every three persons in the United States now has regular membership in Blue Cross. A little more than one out of four (27.9 per cent) have regular coverage by Blue Shield. Analysis by Cross and Shield shows that we can expect a sixfold increase in claims and benefits by 1975.

Our own local Blue Cross enrollment has now gone over 390,000 and Blue Shield is over 375,000. Let's adjust to the prospect that our Blue Shield payments will top \$5,000,000 this year. We have to be efficient and fast to stay ahead of this!

To provide \$1 of benefits, it costs:



Source: Office of Research and Statistics, Social Security Administration

Blue Cross-Blue Shield[®]

OF SOUTH CAROLINA

CONTINUING MEDICAL EDUCATION IN AND AROUND SOUTH CAROLINA

Continuing Education and the RMP

Dr. Vince Moseley has been appointed Director of the Division of Continuing Education of the Medical College of South Carolina.

This new Division will serve to develop and promote postgraduate education by the College. Faculty members of the various schools will be primary catalysts in providing new and innovative continuing education programs.

Seminars and conferences will be given by the faculties both at the College and at various hospitals throughout the state as affiliated programs are developed.

Dr. Moseley will continue to serve as Coordinator of the South Carolina Regional Medical Program. The SCRMP, in addition to working with regional and community groups in promoting improved methods for the prevention, diagnosis and treatment of heart disease, cancer, stroke and related diseases, is working with physicians, hospitals, allied health groups, lay and health organization personnel to promote the recruitment and better utilization of manpower in the delivery of health care services and continuing education.

It is believed that the program planned by both the Medical College and the Regional Medical Program will be strengthened by coordination of the aims and interests of the College and those of the Section of Continuing Education of the SCRMP.

South Carolina's first statewide telephone Pediatric Cancer Conference was held May 21 at 12:00 noon. The conference utilized closed circuit television.

Five hospitals participated in the conference which originated from the Department of Pediatrics at the Medical College of South Carolina. These included the Medical College, Greenville General Hospital, Spartanburg General Hospital, Columbia Hospital and McLeod Infirmary, Florence.

The conference was the first program sponsored by the Pediatric Cancer Education and Service Project. Directed by Dr. Samuel K. Morgan, Assistant Professor of Pediatrics at the Medical College, this project is funded by the South Carolina Regional Medical Program.

"Neck Masses in Children (Hodgkin's Disease)" was discussed, utilizing a case study involving a twelve-year-old male with Hodgkin's Disease. Prior to the conference, video tapes, slides and x-rays were mailed to the participating hospitals for simultaneous viewing.

Medical College participants included Dr. Morgan; Dr. H. Biemann Othersen, Associate Professor of Surgery and Pediatrics; Dr. Keene M. Wallace, Professor of Radiology; Dr. James G. Ward, Resident in Pathology; and Mrs. Judith Kari, Pediatric Social Worker.

The Pediatric Cancer Education and Service Project is directed toward improving pediatric cancer care on a statewide basis by establishing a post-graduate physician education course in pediatric cancer diagnosis and therapy; by forming a statewide "tumor board" to encourage cooperation between physicians, cancer clinics and the Medical College; and through dissemination of consultant advice directed toward more uniform care of the pediatric patient.

NEW MEMBERS OF SCMA

Dr. Eugene M. Busch
711 N. Church St.
Spartanburg
Dr. Robert T. James
1220 N. Fant
Anderson
Dr. William F. Price
4 Catawba St.
Spartanburg
Dr. Charles L. Hall
Greenwood

A REPORT ON ATTITUDES OF STUDENTS AT THE MEDICAL COLLEGE OF SOUTH CAROLINA AND THEIR RELATIONSHIP TO NATIONAL STUDENT ACTIVITY

EDWARD WEST*

It is quite an honor for me to have the opportunity to address this convention. But more than an honor, I feel a responsibility to my state and to her physicians and citizens, to report on the attitude of the Medical Student in South Carolina and the nation today. Unfortunately the topic of student attitude may be *too* timely as measured by the David Brinkley-Walter Cronkite-Al Capp index of interest. Yesterday I felt an acute attack of the embarrassments when Dr. Hawk spoke of the student assault at the AMA Convention. I would like to reassure you that the students who were invited to this convention by Dr. Waring and who are sitting among you are unarmed and should not be considered dangerous.

Recently the Medical College sponsored two representatives to a student convention in Chicago, assembled to review medical education in the United States. Although SAMA—the Student American Medical Association—was the primary impetus for the meeting's organization, representatives of SHO—the Student Health Organization—and various minor medical student groups were also invited. The qualifying criterion for a representative was that he be a medical student interested in the effectiveness of medical education today. Instead of a formal report of the convention, I would like to relate to you some impressions—in this case, the impressions of a fairly naive participant mixing, for the first time, with individ-

uals who have become known popularly as "Student Activists." The trip to Chicago will be a loss of the state's money if these impressions are not expressed, explored and understood. Furthermore, it is my opinion that more than money will eventually be lost if action is not initiated by these impressions.

To avoid taking my experience at Chicago out of its pertinent context, it will be helpful to examine the student at the Medical College of South Carolina and his relationship to the faculty and administration. Although a statistical profile study of the student at the school is not available, some generalizations can be made with a fair degree of validity, if the inherent weaknesses of generalizations are recognized. The student is selected from the candidate population largely on the basis of undergraduate achievement as measured by grades and M.C.A.T. scores. The interview, except in case of equivocal undergraduate achievement, is primarily a perfunctionary screen for grossly abnormal behavioral patterns. Essentially it is assumed that the student will be, to a reasonable extent, a "Gentleman and a Scholar" in the tradition of the Old South. It is indeed a fact that the student in Charleston has ingrained attitudes of courtesy and respect for those older and wiser than he, and that he does, in fact, take his studies seriously (especially around exam time.) Beyond this, his attitude toward the school and its future are those of more passive interest. Except for those aspects which affect him personally—a failed quiz or an uninspired faculty member—the student rocks along

*Student at the Medical College of South Carolina, Charleston, S. C. Paper presented at the Annual Meeting of the South Carolina Medical Association, May 13, 1969, Myrtle Beach, S. C.

for four years, complaining little, absorbing much. This might also be phrased "*giving* little, taking *much*." He sees weaknesses in his medical education and in the delivery of health services but fails to champion their correction simply because he "does not have the time." And yet time is merely a portion of the reason. The other portion is a lack of drive—energy . . . apathy . . . toward the effectiveness of his educators and their methods. It is important to understand that this lack of an action-demanding interest in medical education does not preclude a similar feeling in the student toward actually becoming a physician. After all, becoming a good physician is the student's primary goal and the process consumes a great deal of his drive. And perhaps this is as it should be. Maybe the student is not a reliable judge of how effectively the faculty is getting its points across. Maybe he can do nothing, as an individual, to correct deficiencies he perceives and thus should make no attempt. Maybe these four years should be spent only in learning the profession by whatever means are employed and in being thankful for the opportunity. But maybe students at the Medical College do not work on weaknesses in the educational and health care systems because they do not have the means to communicate their ideas.

Student activism has taken on an ominous ring in recent months. When classrooms become battlegrounds and deans' offices become temporary student dormitories, *activism* becomes indistinguishable from anarchy. But what about apathy? Is doing nothing really preferable to doing something? Obviously doing nothing is better than doing something *wrong*. Perhaps surprisingly to some, however, a number of the points supported by activists are, when the volume is cut down and the beards cut off, found to be valid and valuable criticisms.

Before leaving the medical student in Charleston, it would be worthwhile to examine what voice he has in the affairs of

his school and what effect that voice has on the quality of his education. There are a significant number of students today who have not only legitimate criticisms, but also sensible solutions; and these young adults, short months away from a doctorate degree, have exactly two amazingly inefficient means to make their views known. They may either approach individual faculty members as individual students, without the more convincing weight of a student body in support, or they may funnel remarks through the class president who passes them on, often in a diluted form. Either way, the remark loses in the translation and even if action is taken, it frequently is not recognized by the student due to the equally ineffective feedback which exists. There are no regularly scheduled—or even irregularly scheduled conferences with faculty and students in attendance to solve mutual problems. The poor feedback on suggestions which are made results in the student, who took the time to analyze a problem and formulate an answer, losing interest because he hears nothing more on the subject. There is no interclass communication to permit the upperclasses to perceive that their ideas were tried on the classes which followed them, and to permit the lower classes to perceive which problems to anticipate and which solutions have been tried before. There are no consistent means of reviewing the effectiveness of instruction in terms of statistical validity. At present, evaluation is strictly an informal end-of-the-year affair, done when the evaluating class could not possibly gain for itself any advantages from suggested improvements even when the improvements are implemented. If the Medical College of South Carolina had no *sand* in the lubricating oil, this address might not be necessary. But, as you know, within the last year, the curriculum was judged outdated and inadequate by a unanimous vote of the faculty and the striking nonprofessional workers in the hospital sought an *outside* source for a spokesman. Also, the students who are

not satisfied with not being heard are just now making their appearance in other medical schools, and this, then leads to Chicago.

The plane was late arriving at O'Hare Field and, consequently, the opening session of the convention was underway when we arrived. As we stared across the smoke enshrouded conference room at our colleagues from virtually every state in the union, we became immediately impressed by the students who were dominating the informal but controlled discussion. They were indeed the "activists" who *consume* headlines, prime time, and tear gas. From the biting comments they offered at the expense of their own faculties, it became obvious to us that these people had something to say and either could not, or would not, say it in even tones across a table to their faculty. Unlike the students we knew, though, they were not contented to bide their time without being heard. They demanded an audience and, by one means or another, they got it. For the moment, *what* they had to say was not nearly as important as the *way* in which it was said. And here is the first trap to which distant observers of student activists succumb. When the vehicle attracts more attention than the goods, that which may be of real value is lost.

There were two main organizational units at the Chicago convention—SAMA and SHO. SAMA by far is the larger in terms of national membership but SHO, surprisingly, seems to be the larger in scope and in influence on medical school campuses of the North, East and Far West. The organizations differ more in degree and tactics than in actual philosophical points and, while the bulk of medical student activists are members of SHO, a number of SAMA members lend overt and covert support to SHO activities. Just as there is a broad range of views in, for instance, the American Democratic Party, SAMA is composed of "conservatives," "moderates", and "liberals," if such terms can be employed. And before the intentions and activities of

SAMA nationally are roundly criticized by South Carolina physicians, it should be understood that more than 90% of the students at our medical college are members of the organization. Just as the Republican Party is big enough for Jacob Javits and Strom Thurmond, SAMA can contain "liberals" from New York and "conservatives" from South Carolina. But here the comparison ends and it is from this point that the liberal element of SAMA has joined with SHO and left the conservative and moderate majority far behind. On *campuses*, the majority are willing to wait—to grumble a little perhaps, but to wait; the activists take over in the vacuum and waiting goes out of fashion. At *conventions*, the majority chooses not to see that it is represented proportionately—they do not have the time; the activists turn out in numbers exceeding their proportionate population and virtually assume command. We saw this happen at Chicago.

On the first full day of the meeting it was announced that the entire program had been discarded and representatives were virtually told to make their own convention format. At this point it seemed like a sound idea which would allow an exchange of views, the only real reason for our being there. The exchange was a valuable experience and numerous ideas and innovations being tried at other campuses to improve medical education and its evaluation were explained. It soon became apparent though, that a large number of representatives had not come simply to exchange views. They had come to control the convention and use it as a forum for their program. These students knew each other from past conventions and knew what they were doing. They had a purpose which went beyond the more passive attitudes of the rest of us. Unfortunately, the deans of medical schools were meeting on the same week-end the students were, and incredibly, their meeting was in the same hotel. It should come as no surprise then, that the radical representatives crashed and literally took over the podium

of the dean's convention Saturday morning, completely disrupting it and forcing most of the deans to reconvene in another room. There was a definite element of childish bullying in this action which aroused many moderate students when they heard of it. But then an amazing phenomenon occurred in our general session Saturday afternoon. Instead of apologizing for alienating the deans by their disruptive behavior and admitting that they failed to hold the attention of their captive audience long enough to express the points of contention, this same group stormed their own convention and chastised us for not being at the confrontation. "Where were you?" they angrily demanded. And what did we say? Very little.

The radicals then proceeded to read to us the message they had failed to read to the deans. In caustic phrases and well-worn slogans, it described medical education as a dehumanizing experience for the student. It stated that admissions policies select against minority groups, that health services were controlled by a medical "hierarchy" without community representation, that students had no voice in evaluating the effectiveness of their education, and that medical education breeds selfseeking physicians more interested in advancing their own welfare than that of their patients. At this point, the students who had come merely to exchange views began to understand what was happening and we were astounded at ourselves for not objecting. But in retrospect, though most of us don't feel the situation is quite this bleak. Each point they made had a ring of truth to it and this is precisely the reason why attempts to debate the activists fail. The element of truth in their ideals cannot be denied. Of course the practicality of attainment is the great objection to their proposals but these people are not interested in practicalities. They accept no excuses, no compromises.

Now arises the pertinent question, where are the moderate students? We can find them, in the majority, on virtually every campus in the country. We can find

them at the Medical College of South Carolina, composing virtually the entire student population. This great mass of students is ineffective in its opposition to the activists approach for several reasons, which are:

1. It is difficult to maintain enthusiasm for improving a system which responds slowly—the student activists, for all their vulgar methods, get things done.
2. It is difficult for a moderate student to be conscientious in a role as an evaluator when legislators, editors and taxpayers deplore student activity in any endeavor other than his own education—the activists have unilaterally declared themselves *independent* of public opinion, but the moderates have not.
3. It is difficult to tell the radical his ideas are sound but the ends do not justify the means—he will answer that the moderate approach has been tried for years and has failed and we will be speaking some truth.

Finally, the moderate student is thoughtful enough to see *why* things are as they are, and what the implications of change are; the radical, like a flash fire, would sweep a school with change, pull down its heritage and then leave it a smouldering wreck, feeling no responsibility for that which follows. Change seems to come slowly in the South. Our college students are still in the beer-drinking, fun-loving era that has characterized college life for a decade or more. But many undergraduate students in *other* parts of the country have, in the last few years, shifted their activity from panty raids to barricades as they seek to change methods *now*. This new breed of student is filtering slowly into the Southern schools. We have read about these students at Durham, Chapel Hill and Columbia recently. These students pass through college for four years and then—*then* they appear in *medical school*. They already are entrenched in medical schools across the country and if the current trend con-

tinues they will be at our school. The leaders of moderate students at other medical schools who quietly sought a working dialogue with their faculty based on mutual respect and understanding, have been replaced to varying degrees by activists, interested only in a monologue.

If the Medical College of South Carolina is to escape the agony to which other colleges have been subjected, it must prepare for the activists since, at present, it cannot select them out by existing admission policy. And perhaps selecting them out is not a good idea after all. As has been shown previously, what these students have to say sometimes is worthwhile. The better approach is for the college and this Association to prepare for them. Steps the Medical College should take would include multiple means of communicating views offering several options for student expression as an individual, as a group, as a class, as a student body. A method of searching out class leaders and learning their ideas should be employed so that potential points of contention can be recognized and solved, if possible, before they become unmanageable. A program of meaningful personal student-physician contact, as outlined in the new curriculum plan, must be pursued earnestly. A means of feedback to inform the students that their ideas have *not* been filed away but are actually being tried is also necessary.

The South Carolina Medical Association could take some steps which may, in the long run, be even more consequential. If, as the radical students claim, medical education is dehumanizing, each of you, as individuals, could contact a student from your town when he is home for the summer or on vacation and invite him to see the human side of medicine. Show him the incomparably warm difference between shuttling faceless patients through a clinic cubical and dealing with patients who go to your church picnics or repair your television set. This experience could contribute in your efforts to recruit primary physicians as well. If, as the radical stu-

dents claim, physicians have an image of being self-seeking, each of you, as individuals, could ask yourselves "From where has this image come?" Your patients can tell you in a way no one else can. The image of the medical profession must remain impeccable and it can be maintained only if you individually seek its flaws and correct them.

If, as the radical students claim, medical education selects against minority groups, you, as individuals, can find out why, and what you can do to correct the problem. While you and I may be convinced that the Medical College does not practice racial discrimination in its admissions policies, the fact that there are only 3 Negro students in the School of Medicine certainly makes it difficult to protest this point to a person not interested in reason. I found this out the hard way in Chicago. My argument relating to inadequate primary and secondary education was not accepted mainly because I was a white Southerner. Most of us agree that we *could* have more black medical students if we had more qualified black applicants and here is where the front-line physician can play a role as a seeker of talent. I cannot help but feel that, regardless of a South Carolinian's personal feelings about the racial question, it requires only minimal insight to realize that our state progresses as the colored citizen progresses. We can be non-participants and watch welfare rosters grow. Or we can give a colored boy a goal which he can reach, if he works. In short, the practitioners of medicine must become activists in their own right.

If the measures which have just been proposed are not instituted this year, the students will not take to the streets. The present student body is not that way, just as the striking nonprofessional workers were not that way several years ago. And this is the message: the time to prepare is now. Time is not the limitless commodity it once was. And more and more, the leaders of students at other schools are not the "gentlemen and

scholars" they once were. For better or for worse, students are helping to shape their education and the society in which they will live and practice. If the sage counsel of the faculty and practicing physician is used to temper idealism with practicality, it will be for the better. If the channels are not opened, student efforts may well be for the worse. But, either way, change will come.

Now, on behalf of the medical students—not only those of us fortunate enough to be invited to attend this session, but those in Charleston sweating through oral

exams, finishing term papers, delivering babies, and starting IV's—I would like to take this opportunity to express our gratitude on being invited to meet and talk with you.

This simple expression of concern on your part for the student opinion at the state medical college has great significance. The time to begin funneling youthful idealism into productive channels is the present because the present is when the future of medicine and medical education in South Carolina will be decided.

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THE MONTH IN WASHINGTON

Health, Education and Welfare plans to impose Blue Shield schedules for physicians under Medicaid and to limit payments to hospitals under Medicaid and Medicare drew strong responses from the American Medical Association and the American Hospital Association.

Dr. Dwight L. Wilbur, president of the AMA, urged in a letter to Robert H. Finch, HEW Secretary, that all segments of the health care field be consulted in effecting economies in government-paid health services.

"The American Medical Association is eager to make available to your office the composite experience and judgment of the nation's physicians, who are the principal providers of health care to all the people," Dr. Wilbur said. "The needs and problems of patients in all walks of life, at all income levels, come to their attention, in composite, more than a billion times a year.

"It has always been a principle of both the humanity and the professional code of the physician that no one shall ever be denied quality health care because of his inability to pay. The present concern is how this universal care can best be provided within a viable economic system and in the face of burgeoning demand for medical manpower, services, and facilities . . .

"The knowledge and judgment of the nation's physicians—as well as of the prepayment plans, health insurance industry, hospitals, the allied health professions, the actuaries and others—must be enlisted in your battle against the health-care portion of the inflation problem."

Dr. Wilbur wrote Finch following the HEW announcement that federal spending on the Medicaid-Medicare programs would be trimmed by \$328 million through imposing Medicaid fee schedules based on prevailing Blue Shield rates, limiting mental illness benefits under

Medicaid and cutting down hospital overhead allowances in Medicaid and Medicare.

"It is important to recognize that there are many variables in the circumstances of payment for medical and hospital services," Dr. Wilbur said. "Local needs and resources, the educational and motivational levels of the people, the economic conditions of the state and the community are among the reasons for the differences exhibited by the payment patterns of the Blue Shield plans and health-insurance companies.

"These circumstances must be the foundation for any policies involving cost and payments. No universal pattern—no matter how many variations it may try to provide—can be imposed on the thousands of localities without wrecking havoc and probably increasing inefficiency and costs."

Concerning the imposition of Blue Shield rates as fee schedules under Medicaid, Dr. Wilbur warned in an address before the American Society of International Medicine in Chicago that a later step "might be that of physicians in groups on salary and abandonment of the fee-for-service principle." He said that physicians, in combatting such government efforts, must accept the major responsibility of keeping fees as moderate as possible.

The American Hospital Association protested in a letter to President Nixon against removal of the two percent overhead allowance for hospitals. Officially representing the AHA, Ray R. Eppert, Detroit, Mich., hospital trustee, said in a memorandum accompanying the letter to Nixon:

"The recent announcement of a reduction in Medicare reimbursement poses a serious threat to institutional integrity and, therefore, to the ability of hospitals to serve the sick and injured of this nation. Hospitals have been repeatedly assured at the highest levels of government that Medicare changes would not be made without consultation with their designat-

ed representative, the American Hospital Association.

"The AHA has tried repeatedly but unsuccessfully to meet with Secretary Finch. It is incredible that the federal government would propose, without any consultation, removal of the two percent allowance which is a proper component of reasonable costs guaranteed under the law as passed by the Congress.

"The department apparently deemed it unnecessary to consult with the hospital field, and, as far as can be determined, made no serious study of the effect of the proposed reduction on hospitals. Payment of nothing but raw costs will lead . . . to the serious underfinancing of our hospitals."

Drug combinations became the target of the Senate Small Business Subcommittee's investigation of the prescription drug industry.

Medical school professors critical of drug combinations were called as witnesses in two days of hearings opening this phase of the drug industry probe which began nearly two years ago. It was not indicated when, or even whether, drug company representatives would have an opportunity to defend their combination products before the subcommittee.

Dr. Eeinz F. Eichenwald, a National Academy of Science drug specialist, told the subcommittee that "misleading advertising" had lured "the gullible physician" into prescribing useless and sometimes dangerous drug combinations. He also said continued use of drug combinations "amounts to a strong indictment of the ability of many physicians to judge what is effective and what isn't."

Dr. Eichenwald, pediatrics chairman at the University of Texas Southwestern medical school in Dallas, and Dr. William M. M. Kirby, a medical professor at the University of Washington medical school in Seattle, testified on the opening day of hearings on combination drugs conducted by the subcommittee which is headed by

Sen. Gaylord Nelson (D., Wis.).

The two physicians were among 30 drug experts who evaluated combination drugs for the National Academy of Science. The experts' unanimous report said the combinations were useless and sometimes dangerous.

The report caused the U. S. Food and Drug Administration to serve notice April 2 that the 78 combination drugs studied by the scientists would be banned from the market unless drug makers could prove the Academy studies were wrong. Drug companies are fighting the FDA order as to many of the combinations that would be banned.

Eichenwald and Kirby both testified doctors are widely prescribing the combinations despite numerous warnings of their potential danger.

Eichenwald said drug firms point to the admittedly widespread use of combinations to state that physicians must therefore have demanded them.

"The opposite is true, "Eichenwald's prepared testimony said. "The demand was created by misleading advertising."

In another action, Nelson, D-Wis., urged the FDA to restrict cyclamate-sweetened products to a prescription-only basis.

In a letter to FDA, Nelson said "tens of millions of children and adults across the nation are unwittingly being exposed to potentially serious health hazards by the unnecessary consumption of cyclamate-sweetened soft drinks, cereals, desserts and 'sugar' coated pills."

He added "increasing scientific evidence indicates that cyclamates can cause chromosome breakdown, the birth of undersized offspring in animals, interference with effectiveness of certain antibiotics, persistent diarrhea, liver diseases, skin irritation and eruption, difficulty with blood clotting and high blood pressure."

Cyclamate was originally developed as a sugar substitute for diabetics and others forced to restrict their intake of sweets. The FDA recently proposed regulations on labelling and ingredient content for cyclamate.

mate, often used now as a general substitute for sugar.

The Joint Commission on Mental Health of Children is recommending a broad program aimed at bettering the health of the nation's children and youths at an estimated cost of \$6 billion to \$10 billion a year.

The Commission recently disclosed its recommendations to the annual meeting of the American Psychiatric Association in advance of its report to Congress. The 54-member commission—which has completed a three-year, \$1.5 million study—was established by Congress in 1965.

Sen. Abraham A. Ribicoff (D., Conn.), who introduced the legislation to set up the committee, said he would promptly introduce legislation to carry out the commission's recommendations.

The recommendations included national health insurance for persons up to 21 or 25 years old; family planning and birth control; prenatal care; pediatric care for children up to age of three, and physical and mental health services for older children.

Other recommendations:

—Federal funding for about 100 child development councils to help guide fami-

lies through the confusion of Government agencies in order to insure diagnostic, treatment and preventive services for children.

—Appointment of a Presidential council of advisers on children and youth, similar in position and prestige to the Council of Economic Advisers.

Establishment of state commissions and local authorities on child care.

—Federal financing of about 10 evaluation centers to consider the working of the child development councils.

—Publically supported day care available for all children.

—Federal funds for training child health and welfare personnel.

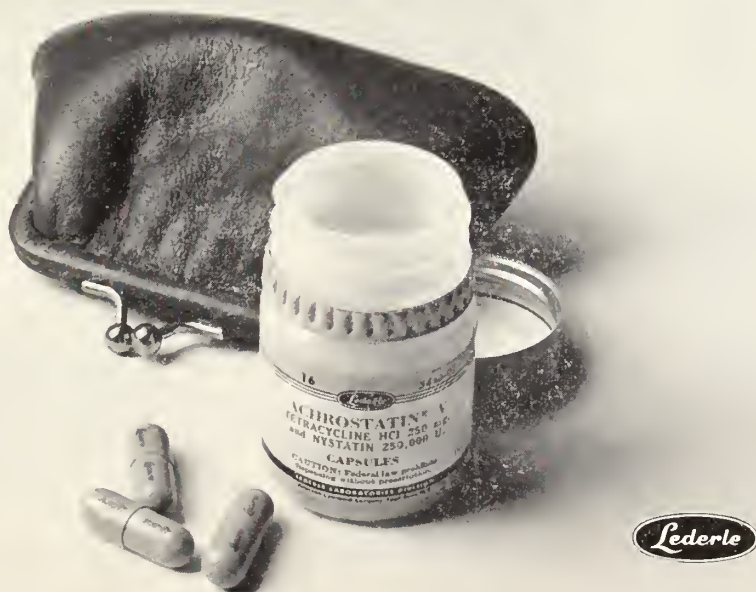
—Tax incentives to induce people to service in slum areas.

Dr. Reginald S. Louri, Washington, D. C., psychiatrist, is chairman of the joint commission.

Nixon, in a Feb. 19 message to Congress, said:

"So crucial is the matter of early growth that we must make a national commitment to providing all American children an opportunity for healthful and stimulating development covering the first five years of life."

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NEWS

Remarks of Dr. William S. Hail, Press Conference, April 30, 1969, On Announcement of the Accreditation of Crafts-Farrow State Hospital.

"I have the very pleasant privilege to announce to you that on April 16, 1969, the South Carolina Department of Mental Health—and thus South Carolina—became the first state in the Southeast and one of among only 18 states to have achieved full accreditation for all its mental institutions.

On that date Dr. Thomas Faison, Superintendent of Crafts-Farrow State Hospi-

tal, was notified that the hospital had been awarded the coveted accreditation certificate by the Joint Commission on Accreditation of Hospitals, the standard-setting body and watch-dog commission on standards of the American College of Physicians, American College of Surgeons, American Hospital Association and the American Medical Association.

This accreditation was granted as a result of an extensive survey of all facilities at Crafts-Farrow in March by one of the inspectors of the Joint Commission."

EPILEPSY FOUNDATION

News from California has heartened the small band of interested persons in South Carolina who have spent more than two years attempting to establish a Full Diagnostic Clinic, with related services, for the sufferers from epilepsy in our state.

The plan, calling for a Full Clinic to be attached to the Medical College, reached a point where federal approval was imminent. However, it had to be temporarily shelved because it could not fill the stipulation that a qualified neurologist must be acquired as full-time director.

However, the New York Times recently reported that a similar project in Northern California has just received a four-year U. S. Public Health financial grant. The project is a joint effort of San Francisco Medical Center and the State Department of Public Health.

What encourages the backers of the Full Diagnostic Clinic for South Carolina is the report that the California project is considered to be a prototype. Upon its success rests the possibility of establishing full diagnostic clinics across the country. What has been achieved in California may help to reactivate the badly needed project for South Carolina's epileptic problems.

Globulin in the Prevention of Rubella and Congenital Defect: Study of 30,000 Pregnancies—J. C. McDonald and C. S. Peckham. *Brit Med J* 3:633-637 (Sept. 9) 1967.

Gamma-globulin was given to 30,746 women after exposure to rubella in pregnancy. The outcome was ascertained and followed in 88% of the cases soon after delivery. Further inquiries were made on a sample of the children when they were 2 or more years of age. Of 610 women who had rubella in pregnancy despite gamma-globulin only 70% came to term. A quarter of the children whose mothers had the disease in the first 12 weeks had heart or hearing defects; the proportion fell to 10% for the next four weeks, and then to 5%. There was no apparent excess of rubella-type defects in the children of women who did not develop rubella though exposed to it. If subclinical rubella virus infection occurred under cover of gamma-globulin, it either carried little risk for the fetus or was not sufficiently frequent for any adverse effect to be detected.

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RUBELLA VIRUS VACCINE

Introduction

The live, attenuated rubella virus vaccine* soon to become available appears to be a highly effective immunizing agent and the first suitable method of controlling rubella.

Rubella is generally a mild illness, but if the infection is acquired by a woman in the early months of pregnancy, it poses a direct hazard to the fetus. Preventing infection of the fetus is the principal objective of rubella control. This can best be achieved by eliminating the transmission of virus among children, who are the major source of infection for susceptible pregnant women. Furthermore, the live, attenuated rubella virus vaccine is safe and protective for children, but not for pregnant women because of an undetermined risk of the vaccine virus for the fetus.

Rubella

Rubella is clinically variable . . . A mild febrile illness may not be recognizable as rubella, and moreover, subclinical infection occurs, which further decreases the reliability of clinical history . . . Far more important is the frequent occurrence of fetal abnormalities when a woman acquires rubella in the first trimester of pregnancy.

Rubella Immunity

At the present time, the hemagglutination-inhibition (HI) antibody determination is particularly useful for evaluating immunity. It is a rapid and sensitive procedure. The complement fixation (CF) and other serological tests are less useful.

Live Rubella Virus Vaccine

Live rubella virus vaccine is prepared in cell culture of avian or mammalian tissues. It is administered as a single subcutaneous injection. Although vaccinees shed virus from the pharynx at times for 2 or more weeks after vaccination, there is no clear evidence of communicability. Approximately 95 per cent of susceptible

vaccinees develop antibodies, but titers are lower than those observed following natural rubella infection. Recent investigations have shown that vaccination affords protection against illness following either natural exposure or artificial challenge.

Antibody levels have declined very little during the three-year period of observation of children who were among the first to be immunized with rubella vaccine. Long-term protection is likely, but its exact duration can be established only by continued observation.

Recommendations for Vaccine Use

Live rubella virus vaccine is recommended for boys and girls between the age of one year and puberty. Vaccine should not be administered to infants less than one year old because of possible interference from persisting maternal rubella antibody.

Children in kindergarten and the early grades of elementary school deserve initial priority for vaccination because they are commonly the major source of virus dissemination in the community. A history of rubella illness is usually not reliable enough to exclude children from immunization.

Pregnant women should not be given live rubella virus vaccine. It is not known to what extent infection of the fetus with attenuated virus might take place following vaccination, or whether damage to the fetus could result.

Women of child-bearing age may be considered for vaccination only when the possibility of pregnancy in the following 2 months is essentially nil; each case must be considered individually. This cautious approach to vaccinating postpubertal females is indicated for two reasons: First, because of the theoretical risk of vaccination in pregnancy; and secondly, because significant congenital anomalies occur regularly in approximately 3% of all births, and their fortuitous appearance after vaccine had been

*Its official name is Rubella Virus Vaccine, Live.

given during pregnancy could lead to serious misinterpretation.

If vaccination of a woman of child-bearing age is contemplated, the following steps are indicated:

Optimally, the woman should be tested for susceptibility to rubella by the HI test. If immune, she should be assured that vaccination is unnecessary.

If susceptible, she may be vaccinated only if she understands that it is imperative for her to avoid becoming pregnant for the following 2 months. (To ensure this, a medically-acceptable method for pregnancy prevention should be followed. This precaution also applies to women in the immediate post-partum period.) Additionally, she should be informed of the frequent occurrence of self-limited arthralgia and possible arthritis beginning 2 to 4 weeks after vaccination.

Use of Vaccine after Exposure to Natural Infection

There is no evidence that live rubella virus vaccine given after exposure will prevent illness. There is, however, no contraindication to vaccinating children already exposed to natural rubella. For women exposed to rubella, the concepts listed previously apply.

Pregnancy: Live rubella virus vaccine is contraindicated. See **Recommendations for Vaccine Use.**)

Precautions in Using Live Rubella Virus Vaccine

Altered Immune State: Attenuated rubella virus infection might be potentiated by severe underlying diseases, such as leukemia, lymphoma, or generalized malignancy, and when resistance has been

lowered by therapy with steroid, alkylating drugs, antimetabolites, or radiation. Vaccination of such patients should be avoided.

Severe Febrile Illness: Vaccination should be postponed until the patient has recovered.

Hypersensitivity of Vaccine Components: Rubella vaccine is produced in cell culture. Care should be exercised in administering vaccine to persons with known hypersensitivity to the species from which the cells were derived (indicated in the labeling). The vaccine contains a small amount of neomycin and should not be given to individuals known to be sensitive to this antibiotic.

Simultaneous Administration of Live Rubella Virus Vaccine and Other Live Virus Vaccines

Simultaneous administration of live rubella virus vaccine and other live virus vaccines should be deferred until results of controlled clinical investigations are available. Until then, it is recommended that rubella vaccination be separated by at least 1 month from administration of other live virus vaccines.

Surveillance

Careful surveillance of rubella infection is particularly important with an effective vaccine in use. Emphasis should be placed upon improved diagnosis and reporting of rubella, of the congenital rubella syndrome, and of complications of the disease. Competent laboratory investigation of all infants with birth defects suspected of being due to rubella is essential. It will likewise be important to observe patterns of vaccine use and determine their effectiveness.

PHYSICIANS WANTED

Physician badly needed in Piedmont, South Carolina. Office building with 14 rooms available. Communicate with the Journal, 80 Barre St., Charleston, S. C. 29401

Physician needed in Bethune, S. C. vicinity. Communicate with the Journal, 80 Barre St., Charleston, S. C. 29401

LOCATIONS WANTED

Physician, age 36, now with the U. S. Army will be available August or September and wishes to practice obstetrics and gynecology in South Carolina. Would be interested in joining a group.

Physician interested in industrial or institutional work or would consider solo practice. Sixteen years experience in general medicine and surgery.

Physician, who will be eligible for the American Board of Surgery, interested in practice of surgery particularly in the Columbia area.

General Practitioner desires location in proximity to a hospital.

Physician, now serving in the U. S. Air Force, wishes to begin general practice in South Carolina in 1971. Particularly interested in a small town in the lower part of South Carolina.

Colonel in U. S. Air Force will complete military service this summer and is seeking employment in the medical administrative field. Experienced surgeon.

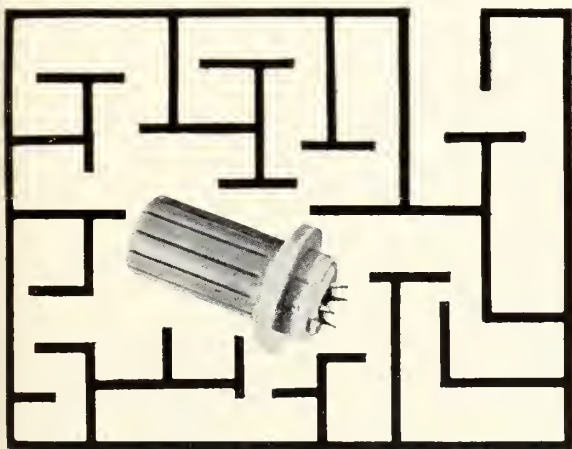
For more information communicate with the Journal of the South Carolina Medical Association, 80 Barre St., Charleston, S. C. 29401

CLEFT LIP AND PALATE CENTER

The Saul Alexander Cleft Lip and Palate Center has been moved from the Medical College Hospital to larger quarters in the St. Francis Hospital Complex in Charleston. This clinic, supported by the Saul Alexander Foundation and the National Foundation-March of Dimes, is concerned primarily with diagnosis and treatment of cleft lip and palate patients. A complete diagnostic evaluation is carried out at the clinic free of charge. Just as heretofore this clinic is open to all including those supported by the Chippel Children's Services and the Vocational Rehabilitation program, as well as those patients who have no support or are of the private category.

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The Center is open from 9:00 to 5:00 week-days and from 9:00 to 1:00 on Saturdays. The telephone number is 723-6033. Robert F. Hagerty, M.D. is director of Cleft Palate Center.



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Hypotensive-Alkaloid. Rx

Manufacturer: Paul B. Elder Co.

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Indications: Management of angina pectoris with hypertensive complications.

Contraindications: Known hypersensitivity to veratrum viride and nitrites, hypotension, coarctation of the aorta, pheochromocytoma, digitalis intoxication, increased intracranial pressure, severe anemia, glaucoma, uremia or idiosyncrasy. Not to be given with quinidine.

Dosage: Initial: 6 tablets daily. Maintenance: 1 tablet t.i.d., p.c.

Supplied: Tablets—bottles of 100 and 1,000.

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Indications: Management of angina pectoris with hypertensive complications, when sodium restriction is necessary.

Contraindications: Known hypersensitivity to veratrum viride and nitrites, hypotension, coarctation of the aorta, pheochromocytoma, digitalis intoxication, increased intracranial pressure, severe anemia,

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Composition: Vitamins A, B₁, B₂, B₃, C, and D.

Indications: Prevention and treatment of multiple vitamin deficiencies.

Contraindications: None mentioned.

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Contraindications: Hypersensitivity to penicillin.

Dosage: Adults and children over 12 years: from 125 mg t.i.d. to 500 mg q.4h. Children under 12 years: mg/kg/day, in 3-6 divided doses.

Supplied: Powder for Oral Solution—125 and 250 mg/5 ml; bottles of 80 and 150 ml.

MULTICEBRIN

Vitamin Combination. o-t-c

Manufacturer: Eli Lilly & Co.

Composition: Vitamins A, B₁, B₂, B₃, B₆, B₁₂, C, D, E, and pantothenic acid.

Indications: Prophylaxis or treatment of vitamin deficiencies, as general daily dietary supplement.

Contraindications: None mentioned.

Dosage: One or more tablets daily, as directed by physician.

Supplied: Tablets—bottles of 100 and 1,000.

DEATH



Dr. Richard Morris Pollitzer

Dr. Richard M. Pollitzer, 85, of Greenville died May 12, 1969.

One of South Carolina's first pediatricians, Dr. Pollitzer was born in Charleston. He was graduated from the College of Charleston and the Medical College of South Carolina (1908). He interned at Roper Hospital, where he was paid one dollar for the year's work. He also studied at Boston City Hospital, Boston

Children's Hospital and at Mt. Sinai Hospital in New York City.

In 1929 Dr. Pollitzer studied pediatrics at the University of Vienna and later took courses in Munich, Berlin, Frankfurt, London and Paris.

He taught at the Medical College of South Carolina and became professor of pediatrics in 1918. In 1924 he resigned his professorship in Charleston and moved to Greenville to practice pediatrics.

He was a co-founder of the South Carolina Pediatric Society and its second president. Dr. Pollitzer was a charter member and lecturer of the Southern Pediatric Seminar, a diplomate of the American Board of Pediatrics and was a fellow of the American Academy of Pediatrics. He was a staff member of Greenville General Hospital, St. Francis Hospital, and Shriner's Hospital for Crippled Children.

Dr. Pollitzer was author of many scientific publications and a contributor to *Archives of Pediatrics*, *Southern Medical Journal* and *The Journal of the S. C. Medical Association*.

Dr. Pollitzer was married to the former Cora Lee Sprott and is the father of Dr. Richard S. Pollitzer of Spartanburg and Dr. William S. Pollitzer of Chapel Hill.

Book Reviews



POST-TRAUMATIC PULMONARY INSUFFICIENCY by Francis D. Moore, M.D., John H. Lyons, Jr., M.D., Ellison C. Pierce, Jr., M.D., Alfred P. Morgan, Jr., M.D., Philip A. Drinker, Ph.D., John D. MacArthur, M.D., Gustave J. Dammin, M.D., First Edition, W. B. Saunders Company, Philadelphia, 1969, Pp. 234, \$12.50.

Based upon comprehensive and intensive clinical research, this book records results of efforts to define processes responsible for the death of young patients of good health prior to injury or illness. It examines terminal mechanisms in salvageable patients who are significantly in the prime of life.

One of the commonest terminal pathways is a highly lethal form of progressive respiratory failure. This form of pulmonary insufficiency is a mixed lesion as to bacteriology, pathogenesis, and treatment. It presents a characteristic syndrome. It may be curtailed by early recognition and avoidance of local and systemic measures that are a further hazard to the lungs.

The clinical and chemical behavior of the pulmonary insufficiency syndrome is described along with the disordered physiology and the pathogenesis. The book concludes with consideration of prevention of the syndrome by proper general and respiratory management of the patient.

The book should be eagerly sought by those involved in the intensive care of respiratory problems. It is clearly written and well illustrated. All

students, nurses, and physicians concerned with the understanding and management of patients having altered respiratory physiology will find this book of interest and service.

H. B. Gregorie, Jr., M.D.

Those of our readers who are fortunate enough to have an interest in the history of our profession will take pleasure in the well printed and inexpensive volumes which come from time to time from Dover Publications, Inc, 180 Varick St., New York, N. Y. 10014. Three recent issues offer much good reading and sound information. They are durable paperbacks and make solid additions to the physician's library.

The three books are James Flexner's **WILLIAM HENRY WELCH AND THE HEROIC AGE OF AMERICAN MEDICINE**, (reprint \$3.00); **THE APOLOGIE AND TREATISE OF AMBROISE PARE**, (reprint \$2.50), and **LECTURES ON THE COMPARATIVE PATHOLOGY OF INFLAMMATION** by Elie Metchnikoff, (reprint \$2.75).

J. I. W.

MODERN TREATMENT. Treatment of Common Allergic Problems; Guest Editor-Roy Patterson, M.D. Rehabilitation; Guest Editor-Daniel J. Feldman, M.D., September 1968, Hoeber Medical Division, Harper and Row; New York. Subscription \$16.00 annually.

This is another of the paper back reviews of therapy of the frequently seen medical disorders.

The symposium on the treatment of allergic problems, under the editorship of Dr. Roy Patterson, is introduced by a brief review by the guest editor of the mechanisms of allergic reactions. Following are a number of articles by different authors presenting an approach to the management of a variety of allergic disorders, including allergic dermatitis, and reactions to routine immunizations. The discussions reflect current thinking in management of the disorders under consideration and make available in brief and readable form methods of treatment

now felt to be most effective. One is left with the feeling that additional information on much that is presented would be helpful; references at the end of each article provide sources for more detailed discussion for interested readers.

The symposium on rehabilitation, the second half of the volume, begins with a brief presentation of the overall scope of rehabilitation, by the guest editor. Subsequent articles discuss evaluation procedures, principles in the use of orthoses and prostheses, the effects of immobilization, and the various approach and programs for patients with chronic pulmonary disease, cardiac disease, a variety of neurologic and orthopedic disorders, muscular disorders and arthritic states. This series of articles appears to this reviewer to be very helpful and illuminating, though in many instances rather brief.

Like most of the Modern Treatment publications this issue contains much information for the practicing physician which is beneficial in the management of the patient with the disorders reviewed. Little that is controversial or in doubt is discussed.

Kelly T. McKee, M.D.

CURRENT THERAPY 1969, Edited by Howard F. Conn, W. B. Saunders and Company, Philadelphia, Pa., 945 pp., \$15.00.

This is the twenty first year for publication of this annual compendium of current thoughts on therapy. An excellent group of consulting editors has been very effective in giving a review of therapy for almost any disease state that a practicing physician might come into contact with. Of necessity there is no bibliography and not all accepted forms of therapy for any one particular disease are presented but for a quick easy source of reference it is unsurpassed. A very complete list of normal laboratory values is included.

This edition can be highly recommended to the student or practicing physician for a quick review.

Charlton deSaussure, M.D.

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JULY, 1969—VOL. 65, NO. 7

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The views expressed in this publication are those of the writers and do not necessarily reflect the opinions of the South Carolina Medical Association.

Contributions of Original Articles

Length—Short articles of about 2,500 words (about 8 typewritten pages, double spaced) are preferred. Longer articles ordinarily will defer to the shorter ones in schedule of publication.

Manuscripts—Manuscripts should be typewritten, double spaced, and the original and a carbon copy submitted.

Illustrations—Ordinarily publication of 4 small illustrations or the equivalent accompanying an article will be paid for by The Journal. Any number beyond this must be paid for by the author except under unusual conditions. Illustrations should be sent as glossy prints or graphs in black ink with lettering large enough to show after reduction.

References—Should conform to the following order: surname and initials of author, title of article in small letters, name of periodical, with volume, page, month, day of the month if weekly, and year—e.g.: Lee, G. S.: The heart rhythm following therapy with digitalis, Arch Int Med 44:551, Dec. 1942. They should be listed numerically in order of appearance in the text. Standard abbreviation for journals should be used. Note that periods are not used with these abbreviations as indicated by the Index Medicus. Other abbreviations should also be standard—e.g. mg, ml, Gm.

Reprints—Reprints will be made for the author at established rates.

WHAT'S
SO WEAK
ABOUT
THE WEAKER
SEX?

The Journal

of the

South Carolina Medical Association

VOLUME 65

JULY, 1969

NUMBER 7

STOLEN PESTICIDES*

R. L. PIETSCH, M.D.**
J. F. FINKLEA, M.D.†
WALTON L. ECTOR, M.D.

Stolen Pesticides?

Since the introduction of DDT during World War II, a bewildering variety of extremely toxic pesticides have been developed and utilized in ever increasing amounts. Concomitantly, morbidity and mortality from pesticide poisoning have risen steadily. Two thirds of all pesticide poisoning cases in South Carolina occur in children.¹ The practitioner may feel insecure when confronted with poisoning emergencies, and he must depend upon the family for an accurate exposure history. This article is intended to alert the physician to the common inadequacy of poison histories and to stress the need for thoughtful clinical evaluation of the patient.

Case Reports

Case I. A pair of 2-year old girls were playing on a lumber pile in their rural backyard. While walking to the house with her mother, one child suddenly "rolled her eyes back." Thus began a series

of convulsions that ended with the child's demise an hour later while en route to the emergency room. The other child vomited, was observed at the emergency room for "bean poisoning" and released after four hours. On home investigation several cupfuls of dust were found on the lumber pile. Dust analysis showed 33% aldrin, a potent chlorinated hydrocarbon; dieldrin, a metabolite of aldrin was found in the plasma (0.017 ppm) of the surviving child. Neither family nor friends would admit knowing its source. The family had no garden. The lumber pile had been present for many months and no poison had been noted when it was covered with tar paper three days before the incident. One family member had worked for a fertilizer plant where aldrin was an additive.

Case 2. Pest control operators might be expected to furnish accurate information on the poisons they use and to observe necessary storage precautions. A 16 month old child became comatose within five minutes after having had "turpentine" from an unlocked container spilled on his head by his three year old brother. He was washed immediately by his mother. When he was seen in the emergency room twenty minutes later, he was cyanotic. There were no respirations and only a feeble pulse of 20. Atropine was administered for pulmonary congestion and possible organophosphate poisoning, causing marked clinical improvement. The RBC cholinesterase was 0.83 um/min/ml. (normal 11.1-16.0). Protopam chloride (pralidoxine chloride, 2-PAM) was given immediately but because of the apparent cerebral anoxia, the child remained stuporous and vegetative after several months. The father was first located after the initial atropine treatment.

*This work was supported by the Pesticides Program, Food and Drug Administration, Public Health Service, U. S. Department of Health, Education, and Welfare under contract PH21-2017.

**Surgeon, USPHS assigned to South Carolina Community Pesticide Study.

†Associate Professor of Preventive Medicine and Pediatrics, Medical College of South Carolina, Charleston, South Carolina

Being a recent pest control employee, he was familiar with pesticides and stated that the poison was diazinon. It had been bought from a store for garden usage. Analysis of the container's content showed 25% DDT and 8.33% parathion, a much more potent organophosphate cholinesterase inhibitor than diazinon.

Comment

The average physician may not be able to classify pesticides into the two most common groups, i.e. organophosphate cholinesterase inhibitors and relatively less toxic chlorinated hydrocarbons. Although there are other classes of pesticides such as carbamates, the organophosphates and chlorinated hydrocarbons are by far the most significant source of pesticide poisoning in South Carolina along with arsenic, a common ingredient of many herbicides. The following table shows the oral and dermal LD₅₀* for the more common pesticides in South Carolina.

Acute Oral & Dermal LD ₅₀ * (Male & Female White Rats)				
Compounds	Dermal LD ₅₀ (mg/kg)		Oral LD ₅₀ (mg/kg)	
	Males	Females	Males	Females
A. Organophosphates				
Methyl parathion	14	24	67	67
Parathion	13	4	21	7
Phosdrin	6	4	5	4
Guthion	13	11	220	220
Diazinon	108	76	900	455
Malathion	1375	1000	>4444	>4444
B. Chlorinated hydrocarbons				
DDT	113	118	2510	2510
Aldrin	39	60	98	98
Toxaphene	90	80	1075	780

*Lethal dose required to kill 50 per cent.

The alert physician should attempt to discover the concentration and form of the suspected agent, its dermal and oral LD₅₀, its toxic signs and symptoms, and the apparent route of exposure. If the clinical picture does not correlate, these factors should each be reconsidered. For ex-

ample, the spilling of diazinon on the head of even a young child does not produce the rapid coma seen in Case 2. One must look for a more potent poison or oral ingestion. If oral ingestion is suspected, stomach lavage is obligatory as is more prolonged vigorous treatment with atropine and 2-PAM because continued irregular absorption from the gut may occur.

It is critical that physicians consider misinformation in poisoning cases that appear atypical. When a pest control operator supplies misinformation in his own son's poisoning, one finds it difficult to consider other testimonies too seriously. Stolen concentrated forms of pesticides are a recurrent, particularly serious source of poisonings.

In all poisoning cases, especially those with very toxic compounds, the physician should also seek to document the type of poison. The family should be instructed by the physician to bring the suspected agent and its container as soon as possible. Any tampering with the original labeled products by the family should be noted because unique potent formulations may have been prepared. If doubt exists, laboratory identification can be made by sending the pesticide to the South Carolina Community Pesticide Study located at the Medical College in Charleston. Analysis is free and information on current treatment is available.

Summary

Pesticide poisonings now constitute a significant morbidity and mortality problem in South Carolina. Misinformation about the source and type of poison is common, frequently because the poison is stolen. Physicians must acquire and study all available pertinent information to insure proper treatment of the patient.

REFERENCE

1. Pietsch, R. L., Finklea, J. F., Keil, J. E., Pesticide poisoning in South Carolina, J S Carolina Med Ass, 64:225-228, June 1968.

THE TREATMENT OF SEVERE BURNS IN CHILDREN

WOODROW W. LONG, JR., M.D.*

H. BIEMANN OTHERSEN, JR., M.D.**

In the past 13 years since the opening of the Medical College Hospital in Charleston there have been 372 children treated here with burns severe enough to require hospitalization. These patients have been referred from all portions of the State of South Carolina and have been in various stages in the course of their treatment. The purpose of this paper is to give a simplified, concise method of treatment for a severely burned child. This treatment regimen can be followed in any hospital in South Carolina.

I. Preliminary Evaluation

The airway should be evaluated early in the treatment of any severely burned patient. Redness of the throat, hoarseness of the voice, wheezes in the chest, singed nasal hairs, burns around the face, and a history of being burned in a closed room should alert the physician to possible respiratory burns. In adults, tracheostomy is often a fairly benign procedure but complications are frequent in small children. In small children, we prefer to insert a nasotracheal tube instead of performing an initial tracheostomy. The Portex plastic tracheostomy tubes conform to the larynx and cause very little tissue reac-

tion. They usually can be inserted without difficulty early in the treatment of respiratory burns. After the tube is inserted, the child should be put in a moist environment and mucolytic agents used to prevent crusting in the airways. These tubes require careful attention to suctioning in order to prevent obstruction. A small amount of sterile water is instilled down the tube and a fine rounded tip suction catheter is inserted and suction performed when the catheter is removed. If the tube must stay in longer than five to seven days, a tracheostomy is performed. Usually within four to five days the nasotracheal tube can be removed without difficulty. When facial edema begins to subside and the patient is improving, a steroid such as dexamethasone (Decadron) is given intravenously in the dose of 0.2 to 0.4 mg/kg in a single dose. After one hour the tube is removed but equipment is available to replace the tube should obstruction still persist. The dose of dexamethasone can be repeated in four to eight hours.

After an adequate airway has been established intravenous fluids consisting of lactated Ringer's solution should be started. It is usually necessary to perform a venous cutdown in order to maintain an adequate flow of fluid. The venesection can be done either in the arms or legs, preferably in an unburned area. A Foley

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**Associate Professor of Surgery and Chief of Pediatric Surgery, Medical College of S. C., Charleston, S. C. 29401

catheter is then inserted so that urinary output may be monitored.

The extent and depth of the burn is now calculated and should be diagrammed

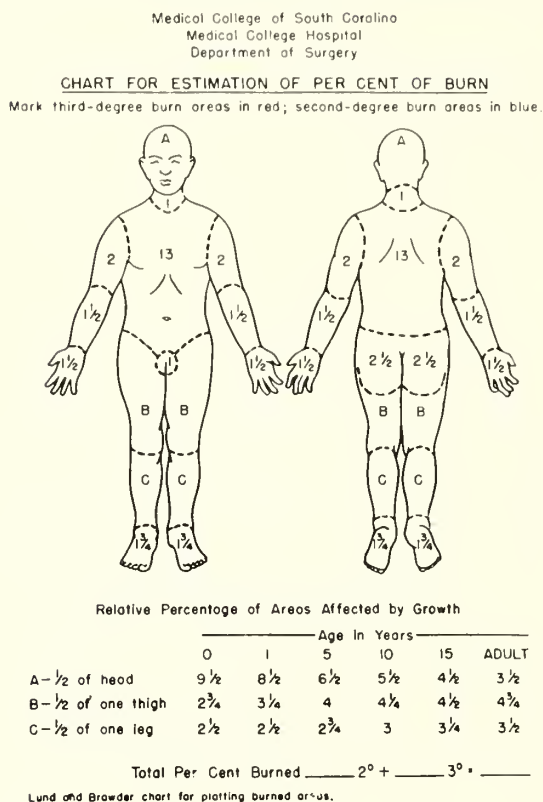


Figure 1

on the chart (Figure 1). First and second degree burns or partial thickness burns are erythematous, blistered, have a mottled red base, are sensitive to pain, and are usually weeping. Third degree burns are white in color, leathery to touch, have no capillary blush, and are insensitive to pain.¹ The percent of burn is the amount of both second and third degree burn combined. This figure is used for calculation. There is usually an overestimation of the burn surface but an underestimation of the depth of the burn. Flame burns are usually third degree whereas scalds from hot water are usually second degree.

Initial laboratory tests should include electrolytes, BUN, CBC, and hematocrit. Blood may be matched but it usually not

necessary to give any blood in the initial 24 to 36 hours after the burn.

Tetanus toxoid is given to those patients who have been previously immunized and human antitoxin to those who have not been immunized. Initially, prophylactic antibiotic therapy is recommended in the severely burned child. The antibiotics which are probably best suited for this function are penicillin in a dose of 50,000 to 100,000 units/kg/day and streptomycin in a dose of 10 to 20 mg/kg/day. The penicillin is given intravenously and the streptomycin intramuscularly. These antibiotics are discontinued after four to five days and then used only after grafting and to treat specific infections. Initially, narcotics may be necessary to relieve pain and apprehension and morphine sulfate in a dose of 0.1 mg/pound or Demerol in a dose of 1 mg/pound is usually adequate. Slow intravenous administration is preferred.

II. Fluid Requirements

There are several formulas which may be used to calculate the fluid requirements of the burn patient. Perhaps the most popular is the Brooke's Army Hospital Formula:

a. Colloid (Dextran, blood, Plasmanate, plasma, or other synthetic preparations).²

0.5 ml x % of burn x body weight in kilograms.

b. Electrolytes (Hartman's or lactated Ringer's solution).

1.5 ml x % of burn x body weight in kilograms.

c. Water requirements (5% dextrose in water).

1 year old (20 to 25 pounds)—80 ml/kg

5 years old (50 to 60 pounds)—60 ml/kg

8 years old (75 to 80 pounds)—40ml/kg

or 1500 ml/meter square/day

This formula is good for children with burns less than 25% of body surface but certain modifications are indicated for children whose burns are over 25%. With large burns it is advisable to give more colloid as follows.³

- a. Colloid (we prefer Plasmanate).
1.5 ml x % burn x body weight in kilograms
- b. Electrolytes (Hartman's solution).
1 ml x % burn x body weight in kilograms
- c. Water requirements (same).

When more colloid is used, there seems to be less edema formation. We prefer the commercial preparation, Plasmanate, and give it just as we would human plasma.

With either formula one-half of the calculated fluid is given in the first eight hours and the remainder over the next 16 hours. The second 24 hour fluid requirement is calculated at one-half of the amount of colloid and one-half of the amount of electrolytes calculated for the first 24 hours. Of course, the daily water requirement remains the same. Second and third degree burns totaling over 50% of body surface are calculated on the basis of 50% burns. It is important to remember that the various formulas are used to calculate an estimate of the fluid requirements and should be changed or modified with the changing clinical picture of the patient.

The urinary output should be maintained at 10 to 15 ml/hour for a one year old and 30 to 40 ml/hour for a ten year old.¹ A careful monitoring of the hematocrit, urinary output, and specific gravity of the urine will give a good evaluation of fluid therapy.

Initially if there is abdominal distention it may be necessary to insert a nasogastric tube. Within 72 hours this tube can usually be removed and oral feedings begun. A solution of 1/2 Hartman's and 1/2 orange juice is usually well tolerated orally. High caloric feedings are begun as soon as possible. If the child will not take oral feedings, a small feeding tube is passed for administration of a high caloric tube feeding. These feedings are not given after 10:00 P.M. in order to prevent aspiration of vomitus during the

night. A simple tube feeding can be made as follows: (Table I)

Table 1 Tube Feeding Formula			
Substance	Quantity	Protein (Gm)	Calories
Homogenized Milk	1 qt.	34	670
Dry Skim Milk	9 tbs.	24	245
Strained Liver	1 jar (to make 1,000 ml)	14	80
Total		72	995

III. Wound Care

The treatment of the burned wound should be deferred until shock is controlled and other treatment instituted as described above. Initial treatment of a burned wound consists of removing loose tags of epidermis and thin-walled blisters are trimmed. The entire burn wound is then washed gently with normal saline. Recent studies have indicated that hexachlorophene (pHisoHex) on prolonged contact can be absorbed from extensive wounds and can cause systemic effects such as vomiting, abdominal cramps, and convulsions.⁴ We, therefore, recommend that after washing with solutions containing hexachlorophene, the burned area be rinsed with copious amounts of sterile saline solution. The cleansing of the wound can be done in the operating room or in the patient's bed after intravenous analgesia has been given. It is rarely necessary to use general anesthesia for the initial cleansing.

After the wound has been cleansed, you must decide whether the burned wound is to be treated by the exposure or closed method. Circumferential wounds with soft tissue injury probably should be dressed. Wounds greater than 20% of the body surface are best treated by exposure. Burns of the face and perineum by their nature almost require that they be treated by the exposure method.

If the closed method is to be used, a fine mesh gauze impregnated with vaseline or Furacin ointment is applied over the burned area and a bulky dressing applied. The dressing should be applied so that the limbs are in a position of func-

tion. After dressing, the wound can be left undisturbed for five to six days. The dressings thereafter should be changed frequently. Care should be taken to allow monitoring of the circulation to fingers and toes when a limb is circumferentially burned. The dressing is easily removed if the patient is soaked in a tub prior to removing the adherent portions. It should be remembered that dressing the wound does not prevent infection and does not significantly reduce the fluid loss in a full-thickness burn.

The exposure method is now used in many hospitals and it is the method we prefer in the treatment of large burns in children. This method is not really "open" in that the eschar or crust serves as the dressing. More nursing care is required but we feel that better care of the wound is obtained. The wound should be carefully watched to detect cracks and infection in the eschar or crust. When using the exposure method the patient is placed on a clean sheet or a non-adherent material and a similar sheet is suspended over him. Suspension can be performed with a bed cradle or by draping the sheet over the siderails of the crib. The burned wound is then treated with a topical antibacterial agent such as Sulfamylon or Gentamycin. A 0.5% silver nitrate solution can also be used but the precipitation of silver chloride in small children can produce severe electrolyte deficiencies of chloride.⁵ Sulfamylon has also been found to produce acidosis by its effect on the kidney tubules and a close check on serum electrolyte in the early post-burn stages is necessary. After the initial few days of therapy when the ointment is frequently applied, a once daily application can be utilized. Gentamycin seems to be more specific for pseudomonas infections. Until the crust or eschar begins separating, it is not necessary to wash the wound daily by immersing the patient in a tub. However, when the eschar or crust begins to separate, the child should be placed in

a tub of clean water and after soaking, local debridement should be performed. After removal from the tub the ointment is re-applied.

Especially when the exposure method of care is used, recognition of the terrific water and heat losses should be made. The room should be kept humid and at a temperature of 80 to 85 degrees Fahrenheit. If necessary a hair dryer may be placed in the bed to maintain a warm environment. All personnel should wear masks and gowns when taking care of a burn wound by the exposure method.

Summary

This paper is concerned with the early care of burns. We try to begin grafting by the 21st post-burn day. The use of skin autografts and allografts will not be considered in this report.

The severely burned child presents a problem and challenge to any physician. We hope that the outline presented in this paper will help to simplify the approach to this subject. A concise outline is as follows:

- I. Preliminary Evaluation:
 - a. Airway
 - b. Intravenous fluid
 - c. Foley catheter
 - d. Extent and depth
 - e. Initial laboratory list
 1. CBC-VPC
 2. Urinalysis
 3. Electrolytes and BUN
 - f. Tetanus toxoid
 - g. Antibiotics
 - h. Narcotics
- II. Fluid Requirements:
 - a. Calculate by formula
 - b. Maintain urinary output
 - c. Tube feeding formula
- III. Wound Care:
 - a. Wound cleansed
 - b. Method of care
 1. Open
 2. Closed

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ACUTE PANCREATITIS

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Acute inflammation of the pancreas continues to be a baffling and at the same time an intriguing disease process. It is perhaps more difficult to diagnose than any other intra-abdominal disease. However the able clinician, aware of its protean manifestations, can achieve intellectual satisfaction for himself and lessened morbidity and even mortality for his patient in separating this disease process from other acute abdominal emergencies.

Etiology

There are many causes of acute pancreatitis, and one authority has gone so far as to list 66 possible etiologic factors. Fortunately it is possible to group the more important causative factors into eight major headings.

Specific infections, both bacterial and viral, are known to involve the pancreas. Blood-borne noxious agents inflame the pancreas in mumps, scarlet fever, typhoid fever, streptococcal food poisoning, *candida albicans* infection and in disease caused by the Coxsackie virus.

The common association of cholecystic disease with pancreatitis and the beneficial effect which eradication of biliary tract disease has upon coexisting pancrea-

titis argues strongly for an infectious origin of pancreatic inflammation. Just how pancreatitis develops as a consequence of cholecystic disease is still a matter of debate. There is more to it than just the old common channel theory, for while a common channel does exist anatomically in over two-thirds of normal subjects and functionally in even a higher percentage of patients with pancreatitis, many factors, including consistently higher secretory pressures in the pancreatic ducts than in the biliary tract, argue against the common channel as the major etiological factor.

Infection as a primary etiologic factor in pancreatitis is of minimal importance. However it has an important secondary role in contributing to the clinical severity of the pancreatitis. Evidence for this is seen in the beneficial effects antibiotics have on both clinical and experimental pancreatitis and by recent work showing that micro-organisms and their toxins produce small vessel thrombotic occlusions in the pancreas. Thus they add a vascular effect which could convert inflammation to necrosis.

The importance of a mechanical factor in the pathogenesis of pancreatitis is generally accepted. Initial emphasis was given to this by Opie's classic paper in

*Paper presented at the Regional Meeting of the American College of Physicians in St. Petersburg, Fla., Sept. 28, 1968.

1901, describing pancreatitis occurring after impaction of a small gallstone in the papilla of Vater. However the common channel theory leaves some unanswered questions and thus attention recently has shifted to the sphincteric mechanism itself. Many factors which influence the tone of the sphincter have been implicated, such as duodenal hyperacidity, edema and inflammation extending from the duodenum, narcotics such as morphine, and even psychic stimuli.

Presently, I think no one seriously questions the concept of pancreatic duct obstruction as an etiologic mechanism of pancreatitis. With rising intraductal pressure due to secretion against obstruction, there occurs a bursting of the pancreatic duct radicals with an escape of enzymes into the tissues and into the blood stream. Without active secretion or interference with blood flow, ductal ligation merely produces pancreatic fibrosis and trophy.

High ductal pressures are the basic means of producing pancreatic duct rupture, generated either by active secretion against obstruction or by external force, such as in cases of pancreatitis developing after operative cholangiography.

Increased duodenal pressures such as are generated in the afferent loop syndrome or in high grade superior mesenteric obstruction of the duodenum eventuate in the same chain of events.

Alcohol probably works to produce pancreatitis by stimulation of acid secretion, bringing into play the secretin mechanism on the one hand, and causing ampullary edema and spasm on the other, thus increasing secretory pressure against ampullary resistance.

Developmental anomalies and viscid secretions in mucoviscidosis are felt to produce etiologically important ductal obstruction.

An adenomatous polyp in Peutz-Jegher's syndrome could block the pancreatic outflow, as could an ascaris playing ostrich

and sticking its head into the ampulla of Vater.

There is abundant evidence that metabolic and nutritional factors are of etiologic significance in the pathogenesis of pancreatitis. Clinically we have seen pancreatitis in such metabolic disorders as essential hyperlipemia, hemochromatosis, generalized siderosis as develops in sickle-mia and in Cooley's anemia, in hyperparathyroid states and after the administration of ACTH and the adrenocortical steroids.

The relationship of abnormal fat metabolism to pancreatic inflammation is a two-way street, and the clinician should attempt to make a distinction between the hyperlipemia of pancreatitis and the pancreatitis of hyperlipemia.

Transient hyperlipemia is a common occurrence in acute pancreatitis. In turn, painful abdominal crises thought to represent pancreatitis occur in idiopathic lipemia. It is important to make this distinction since a low-fat diet would be a therapeutic necessity in the latter case.

Most authorities believe that when hyperlipemia and pancreatitis are associated the hyperlipemia is usually the result of the pancreatitis, not the cause.

In these cases the serum becomes turbid and lactescent at the time of the pancreatitis, reverting to normal with subsidence of the pancreatic inflammation.

Pancreatitis developing in conjunction with hemochromatosis and hemosiderosis is probably also a two-way relationship. While we were all taught that iron deposition in the pancreas resulted in fibrosis and atrophy there is both clinical and experimental evidence that the reverse sequence may occur. In the dog, ligation of the pancreatic duct is followed by generalized deposition of iron, and radioiron absorptive patterns are increased in patients with chronic pancreatitis and pancreatic calcification.

Hereditary pancreatitis could be classified as a metabolic disease, as some of

the reported patients show a protein defect, indicated by amino-aciduria, more specifically lysinuria and cystinuria.

Acute pancreatitis has been noted to complicate hyperparathyroidism. An easy explanation is that deposition of calcium in the pancreatic ducts leads to obstruction of secretion and thus to pancreatitis. Unfortunately it is often not this simple and in many cases there is no completely physiologic explanation of the relationship between pancreatitis and hyperparathyroidism. The pertinent clinical point to remember, however, is that when these two diseases coexist, the serum calcium level usually is completely unreliable as an index in the evaluation of either condition.

We have recently come to recognize a relationship between the pituitary-adrenal hormones and pancreatic inflammatory disease. Specific tubular and acinar lesions can be produced experimentally and have been found in post-mortem studies in patients who had received prolonged ACTH or cortisone therapy.

Protein deficiency is strongly implicated in the nutritional etiology of pancreatitis. Experimentally a methionine deficiency produces a well studied pancreatic lesion and pancreatic fibrosis has been seen in such protein deficient states as advanced alcoholic cirrhosis, kwashiorkor, ulcerative colitis, and ileojejunitis.

A vascular factor in pancreatitis is implicated by such phenomena as phlebitis, venous thromboses, hemorrhage, purpura and certain blood coagulation abnormalities. Experimentally interference with blood flow will both initiate pancreatitis and also increase the extent and severity of pancreatitis induced by other etiologic agents.

Thus we explain the minimal focal pancreatitis associated with diabetic coma, the "terminal acute pancreatitis" found incidentally at post-mortem in elderly patients dying of such causes as coronary occlusion, the acute pancreatitis following

aortography, and the rare cases developing after anticoagulant over-dosage.

Pancreatic toxins include a number of agents capable of damaging the pancreas experimentally. In the clinical setting methyl alcohol is the big offender. Cases of pancreatitis have been reported in patients receiving chlorothiazide, but causal relationships are not clear.

The rare instances of pancreatitis developing in lupus and periarteritis nodosa might be classed as immunologic pancreatitis. Acute pancreatic necrosis has apparently resulted from isoniazid in a few cases.

Trauma to the pancreas, whether external or at surgery, is well known as a cause of pancreatitis. In addition pancreatitis may rarely occur during pregnancy, in Hodgkin's disease, and as a result of electric shock. The causative mechanisms in such cases are unclear.

Diagnosis

There is no pathognomonic clinical pattern for acute pancreatitis. The symptoms of acute inflammation vary from mild attacks of vague digestive distress with minimal pain to fulminating episodes with rapid exitus. In some cases pancreatic calcification and other sequelae of chronic pancreatitis develop in the total absence of pain.

Thus the diagnosis is a difficult one in many cases. In the clinical setting a very good clue is the disparity between the severity of the symptoms and the paucity of early physical signs.

In addition to the often non-specific character of the pain, the anatomic location of the gland makes it almost inaccessible to physical examination. X-ray studies offer less diagnostic aid than in diseases of other intra-abdominal organs and the large physiologic reserve of the pancreas tends to obscure minor metabolic difficulties. In addition the best available test, the serum amylase, may fail to rise if there is extensive acinar destruction, may go up with a number of other intra-

abdominal catastrophes, or even with mumps, and will fall rapidly to normal even if some degree of inflammation persists.

Jaundice, usually mild, occurs only when inflammation occludes the distal common duct. Phlebitis and thrombo-embolism occur in something like 10% of cases.

Purpura, melena, hematemesis, and the hemorrhagic extravasations of Grey-Turner and Cullen make up the hematologic manifestations. At times upper intestinal obstruction beyond that due to the paralytic ileus of acute pancreatitis may result from jejunal obstruction of the closed loop type, annular pancreas involving the duodenum, or even heterotopic pancreatic tissue occluding the pylorus.

In acute pancreatitis, physical examination is of little assistance. It is rare for an edematous gland to be palpable. Shock may be out of proportion to other symptoms, giving rise to confusion with coronary insufficiency or even infarction.

The abdominal findings are subject to great diversity, varying from localized epigastric tenderness and mild spasm to generalized tenderness and rigidity suggestive of the board-like abdomen of a perforated ulcer. This latter is rare and usually the complaint of severe pain cannot be documented by significant objective findings on abdominal examination.

Ileus or peritoneal exudation may result in abdominal distention and rarely massive ascites develops in conjunction with acute pancreatitis.

At times peritoneal tap returns hemorrhagic or "beef-broth" fluid with high amylase levels. High levels are seen in other intra-abdominal catastrophes, but extremely high levels point strongly to pancreatitis.

Laboratory studies reveal transitory glycosuria and hyperglycemia in better than 20% of cases. Blood calcium levels fall, and if below 7.0 mg/100 ml, tetany

may be present and the outcome is usually fatal.

Alkaline phosphatase is present in pancreatic tissues and high levels in the absence of jaundice and bone disease are suggestive of pancreatitis.

X-ray films of the chest and abdomen are indicated in all suspicious cases. The abdominal film may show haziness of the abdomen, obliteration of psoas outline, elevation of left diaphragmatic leaf, and paralytic ileus, either localized to a jejunal loop or to the right half of the colon, producing the so-called "colon-cutoff" sign, with no gas or air seen distal to mid-transverse colon.

Disease of the left lung base should alert the clinician to the possibility of pancreatic inflammation. This may take the form of plate-like atelectasis, mild effusion, pleuritis, or pneumonitis.

In the milder cases, barium study of the upper G. I. tract may be carried out and may show changes in the gastro-duodenal contour, usually displacement and pressure defects.

Cholecystography is of little assistance in the differential diagnosis of acute pancreatic inflammation because of concomitant transient impairment of gallbladder function.

The most useful test in pancreatitis is of course the serum amylase determination. Here the first 72 hours are critical and frequent determinations are mandatory if the transient amylase rises in the milder cases are to be picked up.

A drop to a normal level may occur rapidly, indicating early resolution. But sudden decreases in serum amylase may also reflect extensive pancreatic destruction with subsequent cessation of amylase production, or even escape of amylase and other enzymes into a large pseudocyst rather than into the blood stream. For these and other reasons it is not possible to correlate the severity of the pathology with the level of the serum amylase.

Many other intra-abdominal crises will

result in elevated amylase levels, but these are usually milder rises and if the level is five or more times the normal for your laboratory, almost certainly pancreatitis is the culprit.

Remember that concomitant renal insufficiency will result in higher and more prolonged amylase levels. In such cases urinary excretion of amylase may give the answer, as it would be high in continuing pancreatitis and low in uremia. In fact a number of authorities feel the urinary levels are to be preferred to blood levels in following cases of pancreatitis, especially if secretion rates are determined and not just amylase concentration.

Lipase levels in pancreatitis tend to parallel the rises in amylase, though these increases tend to occur later and persist longer. Lipase levels are helpful in cases of mumps. Here the amylase levels will be elevated due to the inflamed salivary gland. Only if the lipase is elevated can any concomitant abdominal pain be blamed on pancreatitis.

If the patient with suspected pancreatitis presents himself after 72 hours, one is tempted to carry out one of the provocative tests of pancreatic secretion. Basically these tests utilize two types of stimulant; one to increase secretion and the other, usually morphine, to cause ductal obstruction. In acute pancreatitis due to ductal obstruction, use of these tests could easily result in exacerbation of a subsiding inflammation.

Two factors, the degree of ductal obstruction and the extent of parenchymal damage, act in opposing directions to determine the blood enzyme response to stimulation. For this reason, data are usually inconclusive and this test is not recommended in acute pancreatitis.

The secretin test has no place in the clinical management of acute pancreatitis. In cases in which abnormal results would likely be obtained, the patient is too ill for duodenal intubation, and when the test is feasible, the gland will have probably

repaired itself and normal drainage would be obtained.

Therapy

In acute pancreatitis the initial problem is the choice between medical and surgical treatment. Once the diagnosis is established, medical management has a clear edge if we go by all available statistics.

However if one has been unable to exclude surgical diseases of the abdomen and laparotomy has been undertaken, any surgical procedures should be held to a minimum, such as drainage of the lesser sac or a diversionary operation on the biliary tract, either cholecystostomy or choledochostomy.

At times surgery may become mandatory even in the face of acute pancreatitis, such as when massive hemorrhage or evidence of a perforated viscus appears, or with markedly deepening jaundice.

Since one never knows whether the initially mild case will subside under therapy or become fulminant, it is imperative that therapy be vigorous and energetic from the beginning.

Pain and shock dominate the clinical picture. Pain must be controlled and it is generally agreed that meperidine and papaverine are the agents of choice. Morphine and certain other narcotics are to be avoided, as they increase sphincter tone.

Potent anticholinergics given intramuscularly are very helpful in relieving the pain of pancreatitis. These agents suppress gastric acidity, aid sphincter relaxation, and inhibit pancreatic enzyme production.

Paravertebral sympathetic block and splanchnic block will rarely be necessary to control severe pain.

Shock, which is usually an outstanding symptom, must be combatted early and vigorously. Rapid infusion of fluids, blood, albumin, and other plasma expanders such as dextran have a very beneficial effect and this rapid relief of shock is largely responsible for the decreased mortality

from pancreatitis that we have seen in recent years. In some series this has dropped from over 25% to about 5%.

The use of steroids is still controversial. Except in cases of clear-cut adrenal insufficiency, they are probably best confined to use in the severe case of hemorrhagic pancreatitis.

Deficits in serum sodium, potassium and calcium result not only from the disease process itself, but also from diminished intake and loss by nasogastric suction.

Glucose must be given cautiously, lest it aggravate a diabetic state developing from pancreatitis. If blood sugar levels are high, use of insulin must also be cautious as hypoglycemia would be a potent stimulus to enzyme secretion by the pancreas.

"Splinting of the pancreas" is furthered by nasogastric suction which diminishes acid-secreting stimulation and obviates duodenal stimulation by foodstuffs. In addition this aids in prevention and control of ileus and distention.

The prevention of suppuration and the late infectious complications of pancreatitis can be accomplished by use of penicillin and the tetracyclines. Kanamycin is one of the newer antibiotics which are secreted in pancreatitis juice in high enough concentration to be bacteriostatic and occasionally bacteriocidal to sensitive organisms.

Liberal use of chemotherapy has all but eliminated late deaths in acute pancreati-

tis by preventing abscess formation in the lesser sac, in the subphrenic space, and even in the pancreas itself.

Suppression of pancreatic secretion is primarily by measures previously mentioned. A number of newer modalities of treatment await better controlled studies before they can be wholeheartedly recommended. These include the use of Diamox, propylthiouracil, hypothermia, and even peritoneal lavage, which is presently under investigation and clinical trial. Initial reports are encouraging.

A polypeptide extracted from beef parotid gland, called Trasylol, has been employed extensively in Europe as a trypsin and kallikrein inhibitor in acute pancreatitis, but clinical trials in this country have been much less encouraging. Indeed, it is felt any efficacy which can be ascribed to Trasylol depends on its administration in very high doses and at the earliest possible stage.

Under the conditions of clinical practice, when one considers the difficulty of establishing the diagnosis of acute pancreatitis, early use of this agent becomes most difficult.

Possibly there is a place for its use in prevention of post-operative pancreatitis where extensive surgery has been done in the pancreatobiliary region.

Early recognition of a complication requiring surgical intervention is of course mandatory as are measures to prevent the recurrence of inflammation once the convalescent phase has begun.

Prognosis and Treatment of Idiopathic Facial (Bell's) Palsy—D. Taverner, F. Kemble, and S. B. Cohen *Brit Med J* 4:581-583 Dec 9 1967.

The results obtained in the management of 381 consecutive patients with idiopathic infranuclear facial (Bell's) palsy of less than five days' duration are reported. Measurement of the threshold for anodal galvanic stimulation established the prognosis for recoverable conduction block with an accuracy of over 90%. Treatment with corticotropin gel intramuscularly was given to 216 patients. The results in the whole group of 381 patients show a reduction in the overall incidence of denervation by two thirds, and of severe denervation by 90%.

CLINICAL APPLICATIONS OF INHIBITION OF BETA-ADRENERGIC RECEPTORS WITH PROPRANOLOL

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Propranolol, the first clinically useful beta-adrenergic blocking drug, was recently placed on the market after several years of exhaustive clinical trials. On the basis of many investigations, it appears that blockade of the beta-adrenergic receptors may be useful in the treatment of several types of cardiac problems. However, as with any potent drug, the physician must possess full knowledge of its mechanism of action and possible hazards before prescribing. This article is intended as a brief survey of the actions and uses of propranolol for the practicing physician.

Pharmacology

The work of Dale, Ahlquist and others has established the existence of different types of responses to adrenergic stimulation, dependent on the presence of either of two types of receptor sites in the tissues. For example, stimulation of alpha adrenergic receptors causes constriction of blood vessels, while stimulation of beta receptors causes vasodilation. Only beta receptors are located in the heart, and stimulation of these receptors results in an increase in the heart rate and the force of cardiac contraction. The endogenous catecholamines, epinephrine and norepinephrine, stimulate both alpha and beta receptor sites exclusively. Although alpha

adrenergic blocking drugs have been known for many years, propranolol is the first generally available drug which antagonizes the action of catecholamines at the beta adrenergic receptor sites, thus causing slowing of the heart rate and a decrease in the force of cardiac contraction.

Clinical Uses

1. Angina Pectoris

Angina pectoris is due to a disproportion between the O₂ requirements of the myocardium and O₂ supply so that the supply of oxygen is inadequate to meet myocardial metabolic demands. In theory, angina can be relieved either by increasing oxygen delivery or decreasing metabolic requirements. Since both heart rate and the force of contraction are important in determining the amount of O₂ required by the heart, propranolol, by decreasing these parameters during exercise, is often successful in relieving angina that is refractory to the more commonly used drugs. The dose required is highly variable and is best ascertained by starting with a small dose such as 10 or 20 mg by mouth four times daily, and increasing gradually until attacks of angina are substantially reduced in frequency. Doses of 400 mg daily or more have occasionally been used, although the most commonly required dosage ranges from 120 to 240 mg daily. Very close observation of the patient is necessary since congestive failure may appear. Such symptoms may often be controlled with digitalis glycosides and diuretic agents. However, if

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these interventions are not successful in controlling symptoms of failure, propranolol must be discontinued.

2. Arrhythmias

Propranolol can be used in the treatment of various cardiac arrhythmias; its beneficial effects are due not only to beta adrenergic blockade, but in certain arrhythmias to a quinidine-like action as well.

Propranolol may abolish arrhythmias caused by digitalis intoxication, including frequent premature ventricular contractions and ventricular tachycardia. It should be stressed, however, that there is no evidence that propranolol is superior to some of the other commonly used antiarrhythmic agents.

In arrhythmias not due to digitalis, such as atrial fibrillation or atrial flutter with rapid ventricular response, propranolol usually can be relied upon to slow the ventricular rate. Recurrent attacks of paroxysmal atrial tachycardia may occasionally be reduced in frequency or prevented by propranolol, although sufficient information to assess long-term results is not yet available.

When emergency treatment is required, propranolol should be given intravenously in doses of not more than 0.5 mg. every three to four minutes until the desired effect is achieved or signs or symptoms of worsening cardiac decompensation are noted. The drug should not be used in complete atrioventricular block with idioventricular rhythm (unless a cardiac pacemaker is in place) since electrical activity may be slowed further or arrested.

3. Idiopathic Hypertrophic Subaortic Stenosis

Propranolol has been found to be beneficial in many patients with idiopathic hypertrophic subaortic stenosis (IHSS). The exercise tolerance of patients whose primary symptom is angina pectoris has been improved by propranolol, and the frequency of syncopal episodes and of arrhythmias can be reduced in other patients. The reason for this improvement

probably is due to the fact that obstruction to left ventricular outflow in IHSS is made worse by drugs or maneuvers that increase the contractile state of the heart, such as isoproterenol or exercise. Propranolol, by decreasing sympathetic stimulation of the heart, decreases this obstruction. This change is less marked at rest, when there is normally little sympathetic stimulation present, but becomes more significant during exercise.

It should be stressed that in patients with IHSS and congestive failure, the drug may produce deleterious effects just as in patients with other types of heart disease who have signs and symptoms of cardiac failure.

Side Effects and Contraindications

By interfering with sympathetic stimulation to the heart, propranolol decreases the cardiac output response to exercise in normal subjects, and thereby impairs their capacity to perform intense exercise. This finding demonstrates the significant role of the sympathetic system in the cardiac response to the stress of exercise. Propranolol also alters the diurnal pattern of sodium excretion in normal subjects and in patients with mildly impaired cardiac function. However, in patients with severe cardiac decompensation its administration may cause frank retention of sodium and fluid, changes resulting in progressive edema accumulation and symptomatic deterioration. Thus, in patients with heart disease whose cardiac reserve is diminished and who depend upon sympathetic support to maintain compensation, inhibition of cardiac sympathetic stimulation may lead to severe and sometimes irreversible symptoms of cardiac failure.

Other major side effects that have been reported are severe hypoglycemic reactions occurring in patients taking insulin or oral hypoglycemic agents, and acute pulmonary insufficiency due to bronchospasm, a complication that may occur in patients with obstructive airway disease.

Summary

Blockade of the beta-adrenergic receptor is of significant benefit in selected patients with various types of heart disease. Angina pectoris, digitalis-induced arrhythmias, atrial fibrillation and flutter, and idiopathic hypertrophic subaortic stenosis are conditions in which this drug may be useful. However, caution and continued close observation of the patient is always necessary because removal of sympathetic support to the failing heart may

result in severe cardiac decompensation. Propranolol and other beta-adrenergic blocking drugs should not be administered to patients with congestive heart failure that does not respond to digitalis glycosides and diuretics, and to patients with atrioventricular block, unless a cardiac pacemaker is in place. In addition, they should be given with extreme caution to patients with obstructive airway disease and to patients taking insulin or oral hypoglycemic agents.



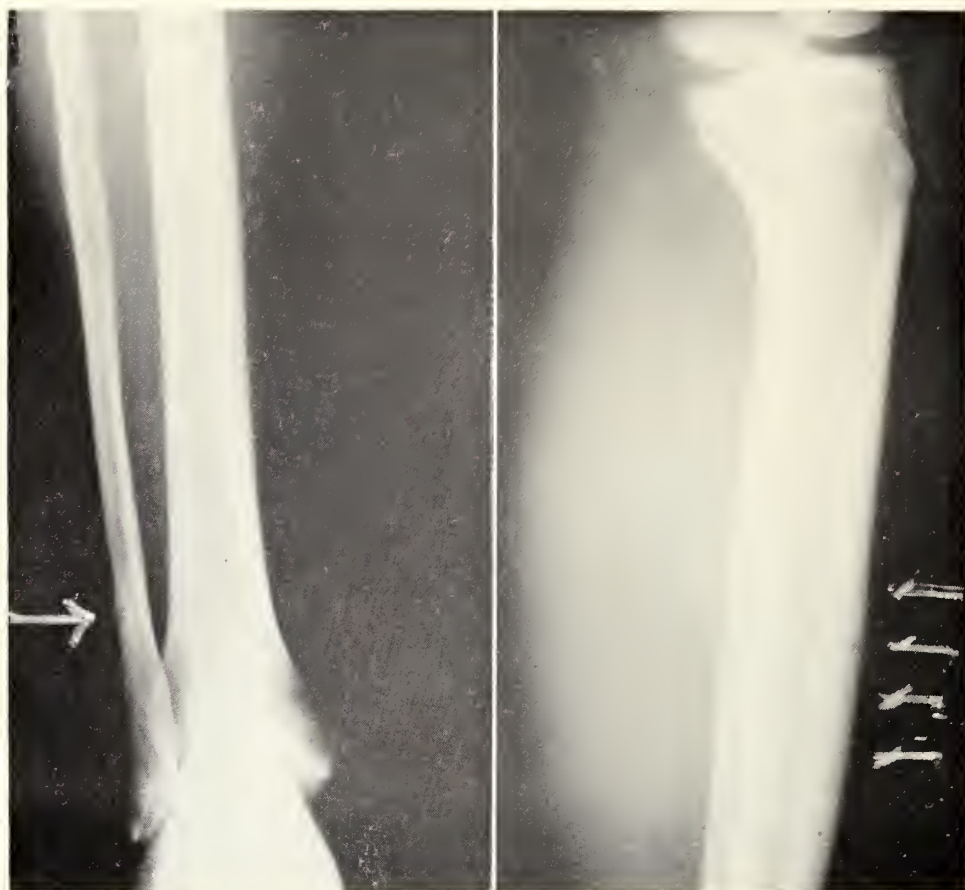
Blood Transfusion in 1874

from *HARPER'S WEEKLY*, July 4, 1874

X-RAY FILMS OF THE MONTH

MID-TIBIAL INFRACTION

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The patient was a 25 year old female dancer with a civic ballet company. She had "fallen off point," sustaining a sudden forceful inversion of the left foot and ankle. Her primary complaint was not that of the usual metatarsal and infra-malleolar pain but rather it involved the lower fourth of the fibula with point tenderness 5 to 6 cm above the inferior tip of the lateral malleolus. Initial films and those made ten days later failed to show a fracture line. Approximately six months later she was seen again with complaints of moderately severe sharp pains along the middle third of the tibia.

She had been told by the company director and others that these were merely "shin splints." The pains were particularly severe and frequent during rehearsals and classes requiring repeated jumps and plantar flexion to point. Infrequently, similar pains were experienced before her fall. She had at first attributed the pain to her previous four weeks "off point" and the altering of her usual working patterns to protect the ankle.

"Fatigue infractions" of the middle third of the tibia in five ballet dancers were described in considerable detail by Burrows in 1956.¹ Several large military

series are also available. The latest, by Blickenstaff and Morris² covers 200 fractures of various sites in young military recruits. Seventeen per cent of these were in the tibia, with the plateau being involved eight times more frequently than the proximal and middle thirds. While our knowledge of the physical-mechanical etiology of this stress or fatigue reaction leaves much to be desired, certain findings on examinations seem quite consistent. Pains produced by forceful plantar flexion (as in initiating a jump) subside with rest. However, an area of point tenderness persists, followed by a limited linear area of swelling and greater tenderness. Slight periosteal new bone formation should be demonstrable in 10 to 14 days. Transverse cortical notching will probably not be seen in less than three weeks, if at all. This frequently is not seen as the lesion progresses to maximal cal-

lus formation. The notching seems more likely to occur if activity is not curtailed early. In such cases the notching may be the prominent radiographic feature with no significant cortical callus developing. The lesion then slowly fills in with new bone formation. While this patient exhibited serum calcium and total protein levels slightly below normal, this has not been reported in other series.

"Shin splints" is a convenient waste basket into which coaches, trainers and dance instructors too often dump any pain in the anterior aspect of the leg. However, those who deal with athletes are now becoming eager for more specific information about these injuries and their treatment. Since three of the ten cases of mid-tibial infraction reviewed eventually went on to complete fracture, further investigation is essential. These lesions have been reported in collegiate hurdlers.

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Prognosis of Neonatal Seizures—T. K. McInerney and W. K. Schubert, *Amer J Dis Child* 117:261-264 (March) 1969.

The charts of 95 patients with neonatal convulsions were reviewed. An attempt at follow-up was successful in 70 cases. The overall prognosis was only fair; 40% of the patients were normal, 26% died, and the remaining 34% had significant CNS morbidity, usually mental retardation. These figures are comparable with those reported in the literature. The largest group, those with perinatal complications, fared rather poorly. The next largest group, those with hypocalcemia, did quite well. Infants who had seizures associated with congenital anomalies or CNS infections had a very grave prognosis. Those with hypoglycemia and seizures of unknown etiology shared a mixed prognosis.

President's Page



"If we don't do it some one else will." How often do we hear this phrase now-a-days. It is becoming a by-word. It is also a fact. Comprehensive Health Planning in the broad sense means what it says—planning for the basic needs for a community, a state, and even the nation. This is well and good. If it is comprehensive—all inclusive—not just limited to consumers needs and desires.

The writer attended one of these Comprehensive Health Planning Conferences recently. Toward the end of the Conference, one panelist mentioned the provider, which one assumes will be doctors and members of the medically allied groups. One of the speakers remarked later he had begun to wonder when reality would show itself.

Stark reality is facing our profession. Doctors have only to attend one of the Comprehensive Health Planning Conferences to come face to face with it. Ours has long been an art, then it became an art and a science, now it is fast becoming only a science and the management of that is being taken from us.

I cannot in strong enough words urge each member of this Association (and other physicians) to look about them and observe the planners at work. They are energetic, diligent and earnest. They are anxious to do things. This too is well and good if their activities are directed. Collectively this is a potentially powerful force.

I urge even plead with you physicians to "get with it" and help plan it, plan it to mutually benefit the community, the hospital, the consumer, and yea, even the provider.

William L. Perry, M.D., President

50 YEARS AGO



July 1919

This issue discussed at some length the development of the Bureau of Child Hygiene. An editorial discussed the campaign to discourage the use of high heels and made a plea for sensible shoes for women.

Editorials

Caduceus

What emblem of his profession the physician uses probably makes little difference to the patient, unless he want to read psychological implications into the sign.

The caduceus, the staff with one snake coiled around it, or two snakes intertwined is the accepted mark of the medical man, hospitals, clinics and various associated objects. Opinions differ slightly as to which of the two designs is appropriate to the man of healing.

While the serpent has its evil connotations, over the ages it also has represented healing and the hope of immortality. The latter attribute comes probably from the snake's custom of shedding its skin and thereby entering into a new existence. Snakes (harmless, presumably) were a considerable part of the apparatus for healing in the old Greek temples, as was the provision of opportunity for sleep, rest, and relaxation, very much as in the more modern spas.

Both types of design of the caduceus go far back into antiquity, and various properties have been attached to the coiling snakes. Appropriately the two-snake design has been connected with fertility. Many meanings have been read into these ancient figures, and there is still not a uniform agreement on their significance. However, the great bulk of opinion agrees that the single snake and staff refer properly to the serpent and staff of Aesculapius, Greek god of healing, and that they offer encouragement to confidence in the therapeutic power of the physician who exhibits the emblem. The knowing doctor will not tolerate the two snake emblem on his automobile tag, his stationery, his office, clinic or hospital, for he is informed by profound opinion that this winged design is the emblem of Hermes (Mercury), messenger of the gods, it is true, but also

accepted in mythology as patron saint of thieves and the conductor of dead souls across the river Styx. Neither occupation should be desirable for the doctor, who should immensely prefer to be identified with an emblem of hope and healing.

Long Hair Styles Constitute Problem In Aseptic Technic

Hair fall-out from operating room personnel is a potentially dangerous source of contamination, both to the current patient and also, through cross-contamination, to subsequent cases, and other departments of the hospital. To protect against this hazard, operating room personnel are required to wear effective hair coverings. The enforcement of this provision is one of the most troublesome aspects of maintaining a high standard of aseptic technic. The problem is made more difficult by the current fashions of long scalp hair, sideburns, moustaches, and beards. The danger of contamination is increased where stiff bristles pierce the mask and carry with them pathogenic micro-organisms from the nose and the mouth. Where the hair is ungroomed and unwashed, the hazard is greater and enforcement more difficult, because in this group in particular there is the underlying psychiatric problem of the mental attitude which expresses itself in this manner.

Hospitals have been caught unprepared. The generally available caps and masks at best are adequate for the conventional hair cut and the clean shaven face. It will require time to design and produce appropriate coverings which will adequately contain long scalp and face hair. Consideration will have to be given to comfort, ease of breathing and making the ears available for glasses and the stethoscope. In the meantime improvisations will have to be made on an individual basis, such

as the use of some styles of nurses caps to cover long scalp hair, and sideburns which do not extend below the lobe of the ear. Where these fail to meet the generally accepted requirements, the alternative would be to enforce restrictive measures which would allow individuals with exposed hair to work only in specially assigned rooms and to prohibit them from participating in operations requiring a high standard of aseptic technique.

While the hospital supplies materials for surgical attire and assumes supervisory control in order to maintain its standards of asepsis, this does not relieve the individual of the final responsibility of making his attire conform to the generally accepted principles governing aseptic technic.

Wm. H. Prioleau, M.D.

Comment by the Hospital Administration Upon the Foregoing Editorial

The problem of safeguarding against contamination from hair fall-out is not new, however, recently it has been brought into sharp focus by the increased difficulty in effecting and enforcing hair coverage where there is hanging scalp hair and long face hair. It is difficult to account for the inconsistency in those surgeons who, on the one hand, are exacting in their demands that the hospital provide expensive equipment and material to insure operating sterility and, on the other hand, unnecessarily expose their patients and other departments of the hospital to potentially dangerous contamination from hair fall-out from their own uncovered hair as well as that from other members of the operating personnel. Can this be attributed to indifference?*

The hospital administration undertakes enforcement through its supervisory personnel, however this cannot be effective without the support of

surgeons, individually and collectively, upon whom rests the final responsibility for maintaining a high standard of aseptic technic.

*A narrow viewpoint of aseptic technic or failure to realize that hair fall-out carries pathogenic micro-organisms?

Richard Morris Pollitzer

On May 12 died a respected and beloved figure in South Carolina Medicine, a kindly man of good will, of knowledge, skill, and culture.

By his friends he was always addressed affectionately as "Polly". He was a man of small physical stature, but he was never lacking in the ability to assert himself in a group, and to hold his ground quietly but firmly, and in good humor.

A pioneer in the specialty of pediatrics in South Carolina, he achieved a sound basic academic and medical education, to which he added by constant study and postgraduate courses to keep him abreast of his profession. He was a faithful attendant and participant at the meetings of the many medical societies in which he held membership. Part of his early medical life and some of his later years were devoted to successful teaching.

Dr. Pollitzer was fortunate in his enjoyment of his many literary and historical interests. Travel and photography were two hobbies which helped to make him into a well rounded man of culture. In his practice he used the philosophy of the doctor of the old school, with modern medical knowledge to sustain it.

With roots deep in Charleston, where he lived, taught, and practiced for some time, he spent the latter half of his life as an enthusiastic and respected citizen of Greenville. He will be sorely missed by his many friends who shared his varied interests.

To Our Persistent Contributors

"Parameters" are stodgy stuff
Fit for the mathematics buff
It scarce behooves the lowly editor
To function as a verbal predator!

J. I. W.

MINUTES OF COUNCIL SOUTH CAROLINA MEDICAL ASSOCIATION

Ocean Forest Hotel

May 11, 1969

Dr. J. Howard Stokes, Treasurer, gave the Treasurer's Report and included the report of the Investment Committee. In reply to a question, Dr. Stokes stated that SCMA receives 1% of collections for AMA. Dr. Joseph P. Cain, Jr. asked if there was any noticeable trend towards doctors not belonging to AMA. Mr. M. L. Meadors replied that there was no such trend thus far.

Council thoroughly discussed the problems in connection with a group of radical right-wing students who are members of SAMA.

Dr. D. Strother asked what AMA's policy about salaried men working directly for a hospital is and Dr. Joseph P. Cain, Jr. replied that he did not think AMA had a set policy. Dr. John C. Hawk, Jr. commented that there is quite a bit of controversy over the country about this sort of thing and stated that AMA had no definite policy against it and there was no state law against it. Council then asked Dr. Hawk to act as their representative at AMA and to bring Council a report on this matter from AMA. It was Council's thought that now is the time to look into the matter of hospitals getting into the corporate practice of medicine. Dr. Klauber moved that SCMA adopt a stop-gap resolution disapproving this practice. Dr. Atwill seconded. Dr. John C. Hawk, Jr. suggested that for the benefit of all concerned, Council have a study made to bring together and to poll other medical associations as to exactly what this spells out at this time. Motion was withdrawn by Dr. Klauber.

Dr. C. Tucker Weston made a motion that the incoming President appoint a committee from the members at large of the SCMA to study and bring back to Council a recommendation concerning corporate versus private practice of medicine as it applies to the current code of ethics of AMA. Dr. Thomas Parker seconded. Motion carried.

Dr. Thomas Parker moved that the incoming President appoint a permanent committee, at least one member of which shall be the councilor from the Charleston area, to work with SAMA and to report at each meeting of Council. Dr. Weston seconded. Motion carried.

Report of the Executive Secretary was given. SCMA has 65 new members. There are 1,655 members of SCMA, 1,508 of which are also AMA members. Mr. Meador's report was very thorough. His complete report will be given to the House of Delegates.

Dr. Joel W. Wyman, President, requested that his appointment of Dr. Forde A. McIver to serve on the local Advisory Committee of the Southeastern Regional Medical Library be approved. Motion carried.

Dr. Joseph P. Cain, Jr., moved that Council re-

quest the State Board of Medical Examiners to review the Medical Practice Law and if they think that we need additional legislation to discuss it with Council. Motion carried.

Dr. John C. Hawk, Jr. moved that Council prepare a statement to be read to the House of Delegates at this session and copies forwarded to the secretaries of each county Medical Society reaffirming the policy that it is the responsibility of the County Medical Society to initiate investigation of charges of a serious nature against a member within its jurisdiction and to report to the Mediation Committee and the Councilor of its district and the Councilor will make himself available to the County Society for advice and assistance. Motion carried.

Dr. Joel W. Wyman read a letter from Dr. J. H. Young, copy attached, who attended the 2nd National Nursing Conference in Chicago on April 11-12, 1969, requesting that five physicians (appointed by the Chairman of Council) and five nurses (appointed by President of the S. C. Nursing Association) get together in a planning session to try to see where we stand, what we can work out with the nurses to see what the problems are in this area and how to approach them. Dr. J. Harvey Atwill moved that this be referred to the incoming President with the motion that he appoint this committee. Motion carried.

Dr. Joel W. Wyman read, as information, a letter from Dr. James M. Wells to Governor McNair regarding cooperation between those who practice medicine and those in the State Government and also the reply from Dr. Kenneth Aycock to Dr. Wells.

Dr. John D. Gilland reported on Health Forums he attended on February 12 and April 20, 1969, and commented that there were only two doctors in attendance.

Dr. Joseph P. Cain, Jr. stated that with funds from a private foundation in Florence, a study of the health needs in the Pee Dee Section is being made. All doctors received a letter from the Health Officer asking that the recipients jot down their thoughts on the health needs of the area and the reaction of all doctors was that not one of them answered the letter. It was Dr. Cain's thought that somebody is going to do this planning and we should bring this to the attention of our local societies in some manner.

Dr. William L. Perry reported on a meeting he attended in Charleston concerning longterm care program sponsored by the Kellogg Foundation.

Dr. Wyman read a letter of April 30th from Mrs. Anne W. Bellew, President of the Abortion Interests Movement in South Carolina setting forth their recommendation regarding Abortion Reform Legislation. Dr. Parker discussed the feelings in his area generally about this movement and moved that we

receive this recommendation as information. Dr. Atwill seconded.

Meeting adjourned at 1:15 p.m.

D. Strother Pope, M.D., Secretary

Ocean Forest Hotel

May 11, 1969

The second session of Council, South Carolina Medical Association, was called to order by the Chairman. Mrs. Peter C. Gazes, President of Women's Auxiliary, after being welcomed by the Chairman, gave the Auxiliary's progress report and submitted the Treasurer's Report and the Auditor's Report of the Student Loan Fund for inspection. Mrs. Gazes commented on the Auxiliary's Work Shop, which is a "first." They now have \$6,009.27 in AMA ERF funds. Community Health has now been put under a specific heading. Among the accomplishments of the Auxiliary for the past year was a refresher course for Registered Nurses, some of whom have returned to active duty or to teaching. Mrs. Gazes thanked Council for their help and guidance. Mrs. Gazes introduced Mrs. D. D. Moise, the incoming President, who spoke briefly to Council. Mrs. Moise is primarily interested in membership, stating that the Auxiliary has only 1,012 members. It is her opinion that doctors' wives need urging to join the Auxiliary.

Dr. J. Howard Stokes, as Chairman of the Committee appointed to study the feasibility of employing a field man, reported that it was the recommendation of that committee that such a field man should be employed with the understanding that he would perform assignments as necessary and that Mr. M. L. Meadors should find and recommend such a man. He presented a supplemental report stating that the recommendation be undertaken as a long range project, and that it was also the recommendation of the committee that the salary of the Executive secretary be increased.

Dr. D. Strother Pope read a resolution by the Columbia Medical Society that the SCMA set up spot TV and/or radio medical programs in order to build up the image of the doctors and to keep the public informed as to what our medical societies are doing. In order to do this, it was recommended that dues to the SCMA be raised to provide a Public Relations Committee to help our Executive Secretary provide this much needed service. Dr. J. Howard Stokes commented that he thought it may not be necessary to increase the dues at the present time in order to take care of the recommendations made by the Columbia Medical Society. A transition period might be advisable. It was also thought that Mr. Meadors might recommend the type and caliber of man needed. There was a good deal of discussion concerning a raise for Mr. Meadors but no definite amount was agreed upon.

There was a general discussion about the possibility of having a membership drive.

There was much discussion about the need of the local societies for someone to do the legwork. Sev-

eral societies have hired personnel for this purpose and others are considering it.

Dr. Joel W. Wyman gave a break down on dues in other states. Georgia charges \$40. They have an Executive Secretary and four assistants. They also have two fulltime physicians. North Carolina has annual dues of \$155. They have an Executive Secretary and four assistants. They added \$25 last year and another \$50 (for five years only). Tennessee has \$70 dues with an Executive Secretary and three assistants. Alabama has \$70 dues with an Executive Secretary and four assistants and one or two more of the assistants act as field men.

Dr. C. Tucker Weston moved that dues be increased \$25 beginning January 1, 1970, thus enabling an increase in Mr. Meadors' salary and the hiring of an assistant when desired. Motion carried.

Mr. M. L. Meadors reminded Council that while plenty of additional work can be done by his office, that alone is not going to suffice. The help and cooperation of every SCMA member is necessary.

Dr. Charles J. Lemmon, Jr., appeared before Council and recommended that Mr. Walter Cox, Clemson, and Mrs. Robert Graham, Sumter, be nominated for Directors on the Blue Shield Corporation. The doctors who are presently members are recommended to remain on the Board of Directors.

The following nominations were made for vacancies on the Mediation Committee:

District One—Dr. Robert S. Solomon, Moncks Corner, S. C. Dr. Kenneth H. Herbert, Charleston, S. C.

District Four—Dr. William J. Goudelock, Easley, S. C. Dr. William J. Bannen, Jr., Simpsonville, S. C.

District Seven—Dr. Thomas M. Davis, Manning, S. C. Dr. S. E. Miller, Georgetown, S. C.

Dr. Joseph P. Cain, Jr., moved that the records of the Mediation Committee be filed in the headquarters of the Association and that the Chairman of that Committee be requested to report verbally to Council at each annual meeting. Dr. Holmes seconded. Motion carried.

Dr. C. Tucker Weston moved that the following Resolution be presented to the House of Delegates of SCMA:

RESOLVED, that Council recommend to the House of Delegates of the SCMA that SCMA actively oppose the Osteopathic Bills now before the Legislature and request an open hearing before the Medical Affairs Committee of the Senate.

Dr. Tanner seconded. Motion carried.

Dr. Joseph P. Cain, Jr., moved that the above motion be tabled until the House of Delegates met on May 12, 1969. Dr. Parker seconded. Dr. Pope dissented. Motion carried.

Much discussion was had regarding the changes of passage of the bills.

Dr. Frank C. Owens joined Council and was asked

his views on the matter. Dr. Owens stated that the original three bills have been passed by the House and are now in the Medical Affairs Committee of the Senate. It is his opinion that if the Committee reports them out favorably, they will no doubt pass the Senate as they are. If the Committee reports them out unfavorably, they still might pass. Dr. Owens does think it possible to get the compromises in as amendments. He also advised that if SCMA decides to ask for an open hearing, they must give some good reasons why osteopaths should not be licensed and not how good the medical profession is. Dr. Owens was sincerely thanked for his guidance and advice.

Dr. Thomas Parked moved that SCMA endorse AAPS Annual School Essay Contest. Motion carried.

Dr. Joseph P. Cain, Jr. moved that SCMA pay the expenses of the President, Executive Secretary, two delegates and two alternates to the annual meeting of AMA, effective this year, and that a committee be appointed to study the cost of same with the view of perhaps raising the per diem and that such increase, if recommended, be set up in next year's budget. Dr. Atwill seconded. Motion carried.

Dr. Frank C. Owens then told Council something of the thinking of Legislature regarding the merger of the Department of Public Welfare and the State Health Department. The cost is the main objection to Title 19 and it is possible it may be put under the Comptroller General's Office. It is now before the Finance Committee. Legislature is considering raising the ante from \$1,000 to \$1,500 for a family of four to receive welfare, which would mean an increase from 75,000 now eligible to about 250,000. This would mean an expenditure of \$6,600,000 by the State with the federal government paying four to one.

Dr. Waitus O. Tanner moved that an offer be made to the agency handling Title 19 by SCMA to appoint a committee to aid in the prevention of abuse of Title 19. Dr. Atwill seconded. Motion carried.

Dr. Michael Holmes gave the report of the Eye Bank Committee. Dr. Holmes stressed the fact that more donors are needed. Fifty-seven cornea transplants were performed last year.

Dr. John C. Hawk, Jr., requested the support of members of Council to a Resolution to be presented to the House of Delegates supporting the Governor, Dr. William M. McCord, and employees who have stayed on the job during the strike in Charleston.

Dr. J. I. Waring, Editor of the Journal, gave his annual report. Dr. Waring suggested that Council be thinking about training a new editor.

Dr. John C. Hawk, Jr., moved that Dr. Waring be asked to seek an assistant who might subsequently be his successor to work with him as Assistant Editor with appropriate title and consideration of a small stipend. Dr. Perry seconded. Motion carried.

D. Strother Pope, M.D., Secretary

Ocean Forest Hotel

May 12, 1969

Dr. John D. Gilland made a motion that Council encourage County Delegates to submit resolutions to the Executive Secretary 30 days prior to annual meetings with the understanding that this would not preclude motions and resolutions being made from the floor. Motion carried.

Dr. Atwill moved that the Executive Secretary send out an agenda prior to Council meetings. Motion carried.

Meeting adjourned.

D. Strother Pope, M.D., Secretary

Ocean Forest Hotel

May 13, 1969

Dr. D. Strother Pope was requested to formulate a Resolution recognizing Dr. Frank C. Owens for his service as Chairman of the Medical Advisory Committee of Selective Service, said Resolution to be read at the May 13th meeting of the House of Delegates.

Dr. John C. Hawk, Jr., was requested to formulate a Resolution in memory of the late Dr. Clay Evatt, Sr., said Resolution to be read at the May 13th meeting of the House of Delegates.

D. Strother Pope, M.D., Secretary

Ocean Forest Hotel

May 14, 1969

The Osteopathic legislation was discussed thoroughly by Dr. Cain. A motion was made by Dr. Thomas Parker that when a public hearing before the Senate Medical Affairs Committee was arranged a new committee from Council composed of the incoming President of SCMA, the outgoing President of SCMA, the incoming Chairman of Council, the outgoing Chairman of Council and the Executive Secretary represent the SCMA and present the case. Motion seconded and carried.

Dr. Joseph P. Cain, Jr., discussed voluntary help by doctors, their wives and secretaries in the Charleston County Medical Hospital and the Medical College Hospital if they were needed to do non-medical work during the present crisis. There was considerable discussion and it was suggested that the new President bring this matter up at another Council Meeting after studying a possible solution.

Dr. Thomas Parker read a letter from the National Chamber of Commerce to all local chapters stating that the National Chamber of Commerce wishes to change its position and support Medicare and urge its expansion. Dr. Parker asked Council members to contact their local chapters and urge them to consider Referendum 102 since the stand must be changed locally. Dr. Parker asked that they vote "no" and stated that the individual chapters' votes must be reported in by May 29, 1969. Dr. Booker moved that Council receive this as information. Motion seconded by Dr. Pope, Motion carried.

Dr. Joseph I. Waring stated that Public Information Committee had been appointed five years ago and that articles had been sent to 12 newspapers in

the form of a weekly column. He wished to know if the Committee was to be continued.

Dr. John C. Hawk, Jr. moved that the present committee be commended and that this activity be continued. Motion carried.

Dr. John P. Booker moved that, WHEREAS, be it RESOLVED, that Council resolves that a committee be appointed by the President from SCMA to be a permanent awards committee to consider a method by which long and devoted service may be recognized and rewarded in an appropriate manner annually, this committee to report its findings to Council in the near future. Motion carried.

Dr. William L. Perry, the incoming President of SCMA, made some very nice remarks to the outgoing Council and thanked them for an excellent job and for their cooperative spirit. Dr. Perry then welcomed the new members of Council. Council was then reorganized as follows:

Dr. William L. Perry, President, SCMA
Dr. J. Anthony White, Vice-President, SCMA
Dr. Ben N. Miller, President-Elect, SCMA
Dr. D. Strother Pope, Secretary
Dr. J. Howard Stokes, Treasurer
Dr. J. I. Waring, Editor of SCMA Journal
Mr. M. L. Meadors, Executive Secretary and Counsel

Councilors:

Dr. A. Richard Johnston, 1st District
Dr. Waitus O. Tanner, 2nd District
Dr. William A. Klauber, 3rd District
Dr. Donald G. Kilgore, Jr., 4th District (CLERK)
Dr. John W. Gaston, 5th District
Dr. John D. Gilland, 6th District
Dr. Michael Holmes, 7th District
Dr. J. Harvey Atwill, 8th District (VICE CHAIRMAN)
Dr. Harold P. Hope, 9th District (CHAIRMAN)
Delegates to AMA (2-year term)
Dr. Joseph P. Cain, Jr.
Dr. Thomas Parker

**(Dr. John C. Hawk, Jr., Alternate, will replace Dr. Cain on January 1, 1970)

**(Dr. C. Tucker Weston will serve as Alternate Delegate beginning January 1, 1970)

**(Dr. Harrison Peebles, Alternate Delegate)

President of SC Medical Care Plan

Dr. J. Hal Jameson

Dr. Perry set the next Council Meeting for 2:00 p.m., June 18, 1969, at the Blue Cross-Blue Shield Headquarters Building.

**INFORMATION ONLY

D. Strother Pope, M.D., Secretary



HAROLD P. HOPE, M.D.
Chairman of Council

NEW OFFICERS OF SCMA

Dr. William L. Perry of Chesterfield was installed as president of the South Carolina Medical Association at the association's annual banquet on May 14.

Dr. Benjamin N. Miller of Columbia was chosen president-elect. Dr. Miller served

a number of years as secretary of the Association.

Dr. John P. Booker of Walhalla, chairman of Council, completed the nine years for which he was eligible as a member of that body, and was succeeded by Dr. Harold P. Hope of Union, formerly vice-chairman. Dr. J. Harvey Atwill, Jr., of Orangeburg, was elected vice-chairman to succeed Dr. Hope.

Other officers elected for 1969-70 include: vice-president, Dr. J. Anthony White of Easley, succeeding Dr. C. Tucker Weston; Dr. J. Howard Stokes and Dr. D. Strother Pope, succeeding themselves as treasurer and secretary; as councilor for the First District, Dr. A. Richard Johnston of St. George; from the Third District, Dr. William A. Klauber of Greenwood, succeeding Dr. Martin M. Teague, who resigned because he had moved out of the District; from the Fourth District, Dr. Donald G. Kilgore, Jr., of Greenville, succeeding Dr. Booker; and from the Seventh District, Dr. Michael Holmes of Kingstree was elected to succeed himself. Dr. John C. Hawk, Jr., of Charleston, was elected

delegate to A.M.A., succeeding Dr. Joseph P. Cain, Jr., who indicated that he did not wish to be re-elected. Dr. C. Tucker Weston was elected alternate delegate.

Members of the Mediation Committee: Elected from the First District was Dr. Robert S. Solomon, Moncks Corner, to succeed himself; from the Fourth District, Dr. William J. Bannen, Simpsonville, succeeding Dr. Kilgore; and from the Seventh District, Dr. Marion Davis, Manning, succeeding himself.



J. ANTHONY WHITE, M.D.

SCMA VICE-PRESIDENT

Dr. White is a native of Bishopville and was graduated from Wofford College and Emory University School of Medicine. Since 1950 he has been engaged in the general practice of medicine in Easley.

Dr. White has been an active member of the Pickens County Medical Society and is a former president of the society. He was instrumental in the establishment of Easley Baptist Hospital, and served as its first chief of staff. He has been a member of the Board of Trustees of Pickens County Schools for many years and is now serving as a trustee of Wofford College.

Dr. White has served as chairman of the education commission, as a director and as president of the South Carolina Academy of General Practice.

NEW MEMBERS OF COUNCIL



DONALD KILGORE, M.D.



WILLIAM KLAUBER, M.D.



A. RICHARD JOHNSTON, M.D.

COUNCIL ISSUES STATEMENT ON MEDICAID

The Executive Council of the South Carolina Medical Association met in Columbia June 18 and issued the following statement.

"The Officers and members of the S. C. Medical Assn. are greatly disturbed over the rumors and reports appearing in the press and being heard in the Legislative Halls that Medicaid is being abused by physicians in the State. Such reports have appeared, and apparently some have been confirmed from other states in the past. It is, of course, regrettable that such things can occur anywhere, but abuses, if they exist in South Carolina, are a matter of genuine and vital concern to the South Carolina Medical Association.

"None of the reports appearing in the news stories, or which have otherwise come to our attention, has been specific. Identities of the accused have not been

disclosed. We have no idea whether or not they are members of the South Carolina Medical Association, but if they are physicians (Doctors of Medicine), such conduct, if it exists, is, of course, in violation of the Principles of Medical Ethics and the high ideals of the medical profession. The fact that any over-utilization or over-charging for medical services performed or pretended, results in an expense only to the Government is of no consequence.

"The Council of the South Carolina Medical Association supports fully the Resolution recently introduced in the legislature calling for a full scale investigation of charges and has offered its services in helping to rectify any abuses, present or future. If they are true, the identity of the individuals involved should be established, and if they are not true, that fact should be made clear in the interest of the good name of the medical profession."

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We have salesmen living in South Carolina to serve you

We have DISPLAYED at every S. C. State Medical Society Meeting since 1921, and advertised CONTINUOUSLY in the S. C. Journal since January 1920 issue.

THE MONTH IN WASHINGTON

The American Medical Association has offered to cooperate in a Senate investigation of large Medicare and Medicaid payments to physicians and other health practitioners.

The offer followed a Senate speech by Sen. John J. Williams, (R., Del.), in which he reported that the staff of the Senate Finance Committee had found that several thousand doctors, dentists and others had received \$25,000 or more for their services under the two government programs in 1968.

In a second Senate speech, Williams expressed appreciation for the AMA offer to cooperate.

"This is the type of cooperation we need, and I appreciate this support from the American Medical Association," Williams told the Senate. "I sincerely hope that we shall have similar pledges of support from representatives of the other groups affected.

"First, in 1968 the Medicare program paid \$25,000 or more to each of at least 5,000 physicians.

"Second, thousands of health practitioners—doctors, dentists, optometrists, and others—were each paid \$25,000 or more under the welfare health care programs in 1968. . . . A surprising note is the large number of dentists appearing on the lists from welfare agencies. . . .

"Data has also been gathered and detailed tables prepared comparing the average Medicare payments for the most common surgical procedures for older people with the maximum payments allowed under the most widely held Blue Shield contract in the same geographical area.

"The results are startling. Medicare's average payments run as much as two to four times as high as Blue Shield maximums. For example, in two areas of the country Medicare's average payment for a cataract operation is more than four times as much as the Blue Shield allowance. These are not isolated cases. There is a pronounced pattern of inflated payments by Medicare.

"The report to the committee will include pinpointing the causes underlying these extremely generous handouts of public funds.

"Another unusual situation has occurred in Social Security's pressing carriers to pay for so-called supervisory services rendered by a teaching physician even though the actual care is provided by an intern or resident. Before Medicare virtually no insurer paid for such services.

"The investigation has expanded the evaluation of carrier and intermediary performance to determine whether the government is getting what it is certainly paying for and the extent to which intermediaries and carriers are carrying out specific functions assigned to them by the Medicare statute."

Following Williams' first speech, the AMA issued a statement saying that it shared with the Senator a concern over the rising costs of Medicare and Medicaid. The Association offered to cooperate with the Senate Finance Committee or any other congressional committee studying the problem of rising health care costs. The AMA earlier had made the same offer to Health, Education and Welfare Secretary Robert H. Finch.

The AMA statement said:—

"For some time the AMA has been giving national leadership in coordinating the efforts of state and county medical societies in the establishment and effective functioning of local review and utilization committees checking on the health care services rendered under the Medicare and Medicaid programs. Close liaison also has been established between carriers and many medical societies in reviewing disbursements under the government programs.

"All investigations so far have indicated that an overwhelming majority of physicians participating in Medicare and Medicaid are charging reasonable fees. The charges of only about two per cent of the physicians receiving payments from the programs have been challenged. Of course,

the AMA favors appropriate action in any of the cases where physicians are found to receive improper payments. Last June, the AMA Board of Trustees urged all state and local medical societies 'to act swiftly and firmly in all instances of known exploitation, and excessive charges for health care that may occur in their jurisdiction.' In 1967, the AMA said 'any reports of abuses by physicians or by any other health care program should be thoroughly and promptly investigated and action taken where indicated.' Several medical societies have expelled members where it has been proved that a physician's charges were excessive or he in some other way exploited the program.

"The AMA, through its publications and speeches by its officials, has been emphasizing to physicians the responsibility they have to hold down the health care costs of their patients both under and outside government programs. In an April 17 letter to Finch, Dr. Wilbur said the AMA 'is eager to make available to your office the composite experience and judgment of the nation's physicians, who are the principal providers of health care to all the people.'

"The knowledge and judgment of the nation's physicians—as well as of the prepayment plans, health insurance industry, hospitals, the allied health professions, the actuaries and others—must be enlisted in your battle against the health-care portion of the inflation problem,' Dr. Wilbur said."

The House passed and sent to the Senate a three-year \$937 million extension of the Hill-Burton Act under which the federal government has helped finance construction of hospitals and nursing homes with 425,000 beds.

Members approved the measure on a 351 to 0 roll call after turning down a series of amendments designed to channel the matching hospital grants more into big cities than urban areas and into modernization rather than new hospital construction.

In addition to extending existing aid, the bill provides new loan guarantees, as requested by the Nixon Administration, and interest subsidies, which the Administration opposed.

The bill as passed authorizes appropriations (over three years) up to \$405 million for hospital construction; \$615 million for modernization; and \$300 million in guaranteed loans, toward which the government would contribute up to \$37 million in three per cent interest subsidies. In addition, grants up to \$30 million could be made for emergency room modernization.

The American Medical Association urged that Congress approve full appropriations for medical education programs.

Dr. C. H. William Ruhe, director of the AMA's Division of Medical Education, testified before a House appropriations subcommittee that the nation's urgent need for more physicians could "only be met effectively by a major increase in the capacity of American medical schools to educate more physicians."

"It is therefore appropriate to emphasize again that full funding in the amounts authorized by the Health Manpower Act of 1968 is necessary to permit the construction of new and expanded facilities before major enrollment increases will be feasible," Dr. Ruhe said.

In a letter to the House Public Health and Welfare subcommittee, the AMA also supported extension of the Medical Library Assistance Act. Dr. Ernest B. Howard, AMA executive vice president, said that "we cannot exaggerate the importance to the health professions and the public they serve" of the many beneficial services supported through the programs.

President Nixon created the cabinet-level Environmental Quality Council to begin a major attack on pollution of the environment. He also named a companion 15-member Citizens' Advisory Committee on the recommendations of Lee A. DuBridge, PhD, his chief science adviser.

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The views expressed in this publication are those of the writers and do not necessarily reflect the opinions of the South Carolina Medical Association.

Contributions of Original Articles

Length—Short articles of about 2,500 words (about 8 typewritten pages, double spaced) are preferred. Longer articles ordinarily will defer to the shorter ones in schedule of publication.

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Convalescing . . . but still a long way to go. Anxiety can make it even longer.

Convalescence following medical or surgical procedures may be almost endless to an anxious patient. And, indeed, anxiety with some patients actually retards progress—for example, by inducing insomnia and reducing cooperation.

As physicians have found during nearly 15 years of widespread use, Equanil may be a beneficial part of aftercare. It helps relieve anxiety and tension, thus often aiding your primary therapy.

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Important Precautions: Carefully supervise dose and amounts prescribed, especially for patients prone to overdose themselves. Excessive prolonged use has been reported to result in dependence or habituation in susceptible persons, as alcoholics, ex-addicts, and other severe psychoneurotics. After prolonged excessive dosage, reduce dosage gradually to avoid possibly severe withdrawal reactions. Abrupt discontinuance of excessive doses has sometimes resulted in epileptiform seizures.

Warn patients of possible reduced alcohol tolerance, with resultant slowing of reaction time and impairment of judgment and coordination.

Reduce dose if drowsiness, ataxia or visual disturbance occurs; if persistent, patients should not operate vehicles or dangerous machinery.

Side Effects include drowsiness, usually transient; if persistent and associated with ataxia, usually responds to dose reduction; occasionally concomitant CNS stimulants (amphetamine, mephentermine sulfate) are desirable. Allergic or idiosyncratic reactions are rare, but such reactions, sometimes severe, can develop in patients receiving only 1 to 4 doses who have had no previous contact with meprobamate. Previous history of allergy may or may not be related to incidence of reactions. Mild reactions are characterized by itchy urticarial or erythematous maculopapular rash, generalized or confined to groin. Acute nonthrombocytopenic purpura with cutaneous petechiae, ecchymoses, peripheral edema and fever have been reported. One fatal case of bullous dermatitis following intermittent use of meprobamate with prednisolone has been reported. If allergic reaction occurs, meprobamate should be stopped and not reinstituted. Severe reactions,

observed very rarely, include angioneurotic edema, bronchial spasms, fever, fainting spells, hypotensive crises (1 fatal case), anaphylaxis, stomatitis and proctitis (1 case) and hyperthermia. Treat symptomatically as with epinephrine, antihistamine and possibly hydrocortisone. Aplastic anemia (1 fatal case), thrombocytopenic purpura, agranulocytosis and hemolytic anemia have occurred rarely, almost always in presence of known toxic agents. A few cases of leukopenia, usually transient, have been reported on continuous administration.

Meprobamate may sometimes precipitate grand mal attacks in patients susceptible to both grand and petit mal. Extremely large doses can produce rhythmic fast activity in the cortical pattern. Impairment of accommodation and visual acuity has been reported rarely. After excessive dosage for weeks or months, withdraw gradually (1 or 2 weeks) to avoid recurrence of pretreatment symptoms (insomnia, severe anxiety, anorexia). Abrupt discontinuance of excessive doses has sometimes resulted in vomiting, ataxia, tremors, muscle twitching and epileptiform seizures. Prescribe very cautiously and in small amounts for patients with suicidal tendencies. Suicidal attempts have resulted in coma, shock, vasomotor and respiratory collapse and anuria. Excessive doses have resulted in prompt sleep; reduction of blood pressure, pulse and respiratory rates to basal levels; and occasionally hyperventilation. Treat with immediate gastric lavage and appropriate symptomatic therapy. (CNS stimulants and pressor amines as indicated.) Doses above 2400 mg./day are not recommended.

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AN EXCITING ADVENTURE IN PEDIATRIC PRACTICE

FRANK HOWARD RICHARDSON,*
M.D., F.A.C.P., F.A.A.P.
Black Mountain, N. C.

The adventure in pediatric private practice recorded here happened nearly half a century ago, after the writer had finished his service overseas in the First World War. But it might just as well have happened last year, or it might happen next year. For the problem presented to the young pediatrician then, confronts many of his successors today.

The pediatrician who practices in the city of New York or its vicinity is faced with a serious financial problem. For the two months or so of summer are so extremely hot and debilitating that parents who can possibly afford to do so, take their children out of the city, to the country, the mountains or the seashore. The closing of the schools for the summer vacation makes this feasible. This poses a real financial problem for the doctor who specializes in children. For it means that although he has plenty of work to do, in the wards of the hospitals or in the outpatient departments in which he holds appointments, none of this is paid for. How is he to keep up with his expenses, for which there is no moratorium?

*Formerly Consultant to New York State Department of Health.

Several of my pediatric colleagues used to set up summer quarters in some locality not too far from the city. Here they could see patients. Such locations might be on Long Island, up the Hudson River, or in neighboring rural parts of New Jersey.

Such a summer exodus of children was even more desirable in the seacoast areas of the Southeast, in the days we are talking about, shortly after the close of the First World War. If an infant became ill anywhere in this area with summer diarrhea, called "colitis" in the South, there was not very much that could be done for him in "the low country," as it was called. For air conditioning had not yet become available, and giving fluids by infusion into the veins was not yet generally practiced. About all that his parents could do for him was to take him up into the mountains, in the hope that the cooler weather there might turn the tide in his favor. Sometimes it did, more often it did not, if he was seriously ill.

A close friend of mine, a well known Southern children's specialist,* was practicing in Spartanburg, South Carolina, not far from Camp Wadsworth, to which my division was assigned for training previous to our embarkation for the front. He

had kept a fatherly eye on my little family while I was overseas.*

He had purchased a small cluster of little summer cottages in a mountain resort town, Saluda, North Carolina, some thirty miles from Spartanburg. Here he had set up a small children's hospital, to which parents could bring their sick babies to escape the hot summers of the "low country." He suggested my doing something of the sort, when my war service was over.

It happened that another friend of mine, a North Carolina Baptist minister, was spending the summer at the assembly grounds of the Southern Baptists at Ridgecrest, North Carolina, some twenty miles from Asheville, in the beautiful "Land of the sky" in mountainous Western North Carolina.

He suggested my starting a summer practice in Black Mountain, North Carolina. It was about three miles from Ridgecrest, and about the same distance from Montreat, the summer assembly of the Southern Presbyterians, and from Blue Ridge, the Southern Y.M.C.A. center.

After much deliberation, I decided to make the break, and try the experiment of starting a summer practice. I had little or nothing to lose. And there was at least the chance of making expenses during the summer months that would have brought in little or nothing in my home location. I engaged a house in Black Mountain for two months, by mail.

When friends would ask me why I went "down South" in the summer, I would tell them that I didn't—that I went "up South!" For the nights here in the mountains were always cool enough to call for at least one blanket; whereas a sheet was often more than enough for the roasting nights during New York's sizzling summer season.

I can still remember the thrill we ex-

perienced as we climbed down out of the sleeper, at the little country station. We engaged a car—the word "taxi" was not yet known—piled our luggage and our three small children into it, and proceeded to our little rented summer cottage, that was to be our home and my office. Medical office buildings were still in the future—the doctor's office was always in his home.

I had ordered a telephone installed. This was the old-time type that hung on the wall of the living room, my office. It had to be cranked in order to attract the attention of "Central." She would then ring the number I gave her—the dialing system was still way in the future.

We got to the house, and unpacked the luggage from the car. I tacked my sign on the porch door, and sat down to await my first patient. Then, believe it or not, the phone rang.

A young mother, who was so excited that she was almost hysterical, told me that her little girl had swallowed a penny. She knew she must give her some castor oil—but what else should she do? I quieted her fears, told her *not* to give the child any castor oil. Instead, she should feed her something solid, like potatoes. My fight against castor oil as a panacea had begun. The young mother followed my instructions, and called me a little while later that all was well. My summer practice had started! I was thrilled again.

It was not too much later that my first house call came. A lean, lank mountaineer, the father of a very sick baby, knocked at our door, and asked me to come and see his sick child. I walked, for nearby calls. So I picked up my medical bag, and followed my man through the thick woods. We didn't speak a word—mountain folk are not talkative with strangers. We came to a little log house. He opened the door, and I walked in.

As I entered, a strange looking, thin old woman jumped behind the door. I soon

*D. Lesane Smith of Spartanburg.

discovered that she was a witch doctor who had been treating the child. Her treatment, consisting in cutting a slit in the child's arm so as to let the evil spirit out, had not helped. So the mother wanted some different treatment.

I made a careful examination, and found a high fever in a poorly nourished baby. I ordered a warm bath at suitable intervals, an enema, and proper care and nourishment. The mother seemed to understand my instructions, and I left.

Whether or not my witch doctor confrere jumped back into the room and repeated her magic after I left, is more than I can say. But when I made a follow-up call the next day, the baby was much better. That was my first and last experience with the supernatural.

That afternoon a mother brought her baby to me, explaining that she would have to give up nursing the little one, as her milk gave him colic so that he cried all the time. Wouldn't I do something to cure his colic, and then give her a formula?

Examination showed a perfectly normal but very hungry baby. Crying lustily was the only way he could tell about his hunger—not about a colic that did not exist.

I showed her how to express her milk into the baby's mouth, by pressing her thumb and finger together, just back of the nipple as he nursed. The baby dropped off to sleep after a few minutes of this more effectual nursing.

I advised her not to let herself get overtired before beginning to nurse the baby; not to nurse right after a quarrel with her husband; and not to try to nurse while her friends, or her other children, were distracting her attention. And I gave her a few other simple rules to follow.

When I called a few days later, all was serene. Had the baby's colic been cured? No, he had never had any colic. But his hunger *had* been cured. My old hobby, breast feeding over formula feeding, had triumphed again!

Many of the cases of my beginning practice were as simple and easy to handle as the first ones. But this was not always the case. Other patients began to be referred to me that presented real problems. According to custom, now as well as then, professional announcements had been sent to physicians throughout the adjoining states. This was not mail advertising, be it noted. It was simply the customary announcement of the opening of an office such as is routine when such a change of base is made. So patients began coming in, referred by their home physicians. This posed a serious problem.

It had long been a strongly held conviction of mine that every one, child or adult, is entitled to a complete physical examination. No one doctor is sufficiently skilled in the various fields of medicine to render such a service unaided. In a big city there are specialists in every field. It is quite obvious that in a little country town, without a hospital, such a complete staff of consultants was absolutely unavailable.

Before I had been in Black Mountain very long, this difficulty became intolerable. Not only did I often need to refer a child for some obvious defect, I wanted every child to have the complete examination to which he was entitled. Here is how I solved the problem.

I had met many of the doctors and dentists in nearby Asheville, socially and at scientific meetings. From among my acquaintances I chose an ophthalmologist, an ear-nose-and-throat man, a dermatologist, an orthopedist and a dentist, to join me for one afternoon a week in a group medicine project that was unusual in this part of the country. Each man examined every one of my patients.

If no defect was discovered for any treatment—dental work, fitting of glasses, or anything else that was necessary, that was reported to the parents. If they chose to have it done—for they were under no

obligation—an appointment was made for the work to be done at his office.

No charge was made for this service, by me or the consultant. He was more than paid for the time he spent on these examinations, by the charges he made for the necessary treatments. A summer tourist tells how the activity resulting from this unusual arrangement impressed him.

"I was curious to see how this doctor's practice differed from that of other children's specialists. Obviously, it must be radically different; for a city specialist does not ordinarily conduct a summer clinic in a tiny mountain village.

"I found a funny little jerry-built frame building. Going down an outside flight of steps, I came upon several groups of children of various ages rollicking around a slide and several swings, under the direction of a pleasant voiced young woman.

"Stepping inside the building, I found myself in a cool, quiet room where a number of mothers sat reading or chatting, free from the tiring job of keeping waiting children amused—a job that had wearied me terribly when I took a friend's little boy to the doctor, and grew grey waiting our turn.

"Climbing the stairs, I found myself in a room with three tables, each surrounded with fresh white curtains, and each with a youngster on it, with a mother and a nurse standing by. The doctor, stethoscope in hand, was ushering a mother from one little compartment into his consulting room.

"Entering the laboratory, I was amazed to find a six-year-old girl chatting with the laboratory technician without a whimper as the lobe of her ear was stuck to obtain a drop of blood. What amazed me still more was to see four or five others laughing and jostling one another to see

which one should be the next to receive the needle prick! No fearful dread there!

"Mystified at this lack of fear, I strolled into the dental office, sure that at last I should encounter the weeping and wailing anyone would expect from a child in a dentist's chair. Wrong again! The jolly face of the dentist gave some explanation.

"The eye doctor was no more awe-inspiring than the dentist. On the wall, instead of the usual Snellen's chart with lines of letters diminishing in size, was one with similar diminishing lines, but instead of letters, rows of the quaintest little figures—a bird, a ring, a fish, a flag and a man. Each child seemed fascinated with the little card that had been given him with a set of these little figures, to stimulate his interest and to take home. Truly, I had never before seen such a group of happy children in a doctor's office."

What impressed my friend as such an unusual arrangement, was what I was enjoying every one of these happy summer days. This was what later became the Children's Diagnostic and Nutritional Clinic.

By the end of the summer I had fully decided that mountainous North Carolina was to be the site of my summer practice. We loved the climate, and the mountain people.

As the opening of our children's school in Brooklyn called us back to the big city, we looked back longingly at the wonderful forest foliage that was just beginning to turn from green to its striking autumn splendor.

Would we come back next summer? Was there the faintest possible chance that we *would not* come back? Our exciting adventure had solved my problem, financially, professionally and personally. Can you think of some way, as good or perhaps even better, to solve yours?

EVALUATION OF THE BLOOD VESSELS OF THE EXTREMITIES

GILBERT B. BRADHAM, M.D.*

During the past 20 years, the art and craft of blood vessel surgery made a heady appearance, evolved and grew to solid stature. The rapidity of new techniques of treating diseases of the blood vessels will probably receive a permanent and prominent place in the historical chronicles of medicine. It is obvious at this time that the drama of these events has waned, that the "vascular surgeon" no longer really exists as delineated from the generalist.

The excellence of surgical training and the standardization of technique now equip surgeons rather equally with the ability to deal with the establishment of vascular patency.

The entity which remains for the full maturation of vascular surgery is the provision of a means to evaluate the treatment objectively. Clinical observation is quite adequate to determine success and failure, but it is required that more standardized means must be provided to state the degree of vascularity and perfusion existing before and after empirical treatment.

This presentation is a description of the current techniques of evaluation of the peripheral blood vessels as they pertain to an actual case of surgical therapy.

Report of a Case

A 58-year-old white male construction worker was admitted to the Medical University Hospital on

Nov. 11, 1968. An elevator carriage had fallen upon the patient's left forearm one month prior to admission. The accident had fortunately produced no fractured bones, but had provided severe crushing damage to the soft tissues of the arm. The injury resulted in massive edema and ecchymosis. As the edema subsided, the generalized pain of the left arm became more localized at the central midpoint of the forearm. Ecchymosis was more permanent at this area. With persistence of pain during the month after the accident, absence of the left radial pulse was noted. The patient claimed marked weakness of the left hand and complained of paresthesias and coldness of the hand.

After admission to the Medical University Hospital, the patient was found to be in good general health and not to be possessed of any significant organic or systemic disease. The left forearm appeared grossly normal except for an area of induration in the anterior left forearm, which measured approximately 36 square centimeters. There was no radial pulse. The patient appeared to have less strength of grip in the left hand than in the right. A routine evaluation was made of the vascularity of both arms. This evaluation consisted of oscillometry, plethysmography, thermography and thermoscopic temperature measurements of all fingers. The results of these tests are depicted in Figs. 1-3.

Under general anesthesia the radial artery was isolated at its origin and at the wrist. Arteriography was done by needle puncture of the distal brachial artery and showed occlusion of the radial artery at its midportion. Exploration of the midportion of the forearm revealed thrombosis of the artery at a site where the artery had been burst. This portion was resected. Fogarty catheters were used to debride all portions of the fibrous thrombus proximally and distally. With the help of an ocular loupe an end-to-end anastomosis was effected with 7-0 silk.

A second angiogram revealed restitution of flow. The patient was discharged, improved, three days after operation.

Two months after discharge, the patient was again examined. He stated that he was improved.

*Associate Professor of Surgery, Medical College of South Carolina, Charleston, South Carolina.

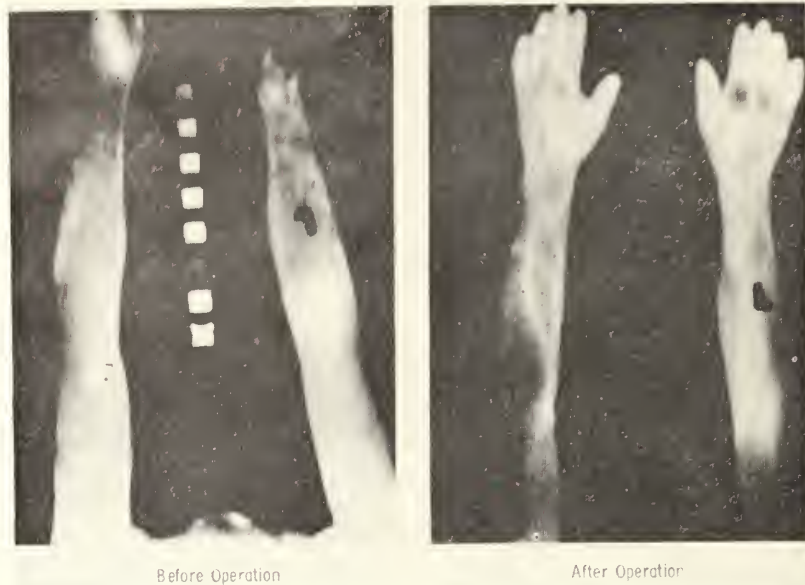


Fig. 1. This is a thermograph (heat or infrared photograph) of the arms and hands of the case cited. It is a mirror image, the left and right being reversed. The white areas represent increased heat. It is seen that after operation, evidence of more heat in the left hand implies increase in vascularity.

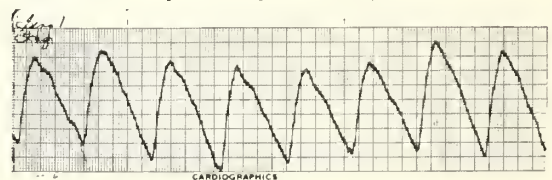
Physical examination revealed a weak radial pulse beneath the surgical scar. Vascular studies were repeated and showed apparent normal vascularity of the left arm and hand (Figs. 1-3).

Comment

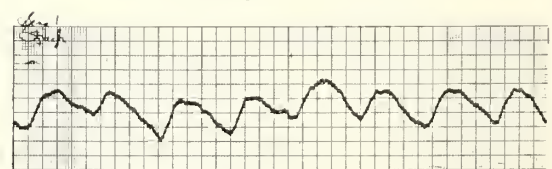
This case represents the usefulness of current techniques of vascular evaluation. A clinical impression was supported by objective criteria to form a firm preoperative diagnosis. It is often difficult to assess blood flow on the basis of manually palpable pulses, and the impressions of clinical examiners vary widely. Only through systematic measurements is scientific certainty provided to the well-developed art of medicine. Only by quantitation in physical units, is scientific information adequately communicated from one physician to another. The education of physicians is completely dependent on cold objectivity if we are to teach students the benefit of critical evaluation of disease.

Fig. 2. Strain gauge plethysmograph tracings indicate normal pulse amplitudes at the finger level in the right hand before and after operation. Pulse volume in the left (involved) fingers are decreased prior to operation and restored to normal after operation.

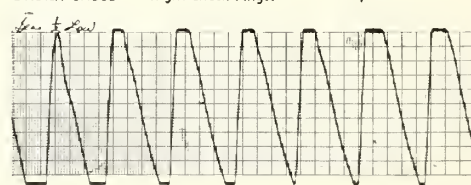
STRAIN GAUGE Right Index Finger - Before Operation



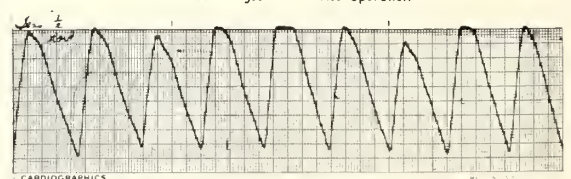
Left Index Finger - Before Operation



STRAIN GAUGE Right Index Finger - After Operation



Left Index Finger - After Operation



OSCILLOTONOGRAPHIC AMPLITUDES:

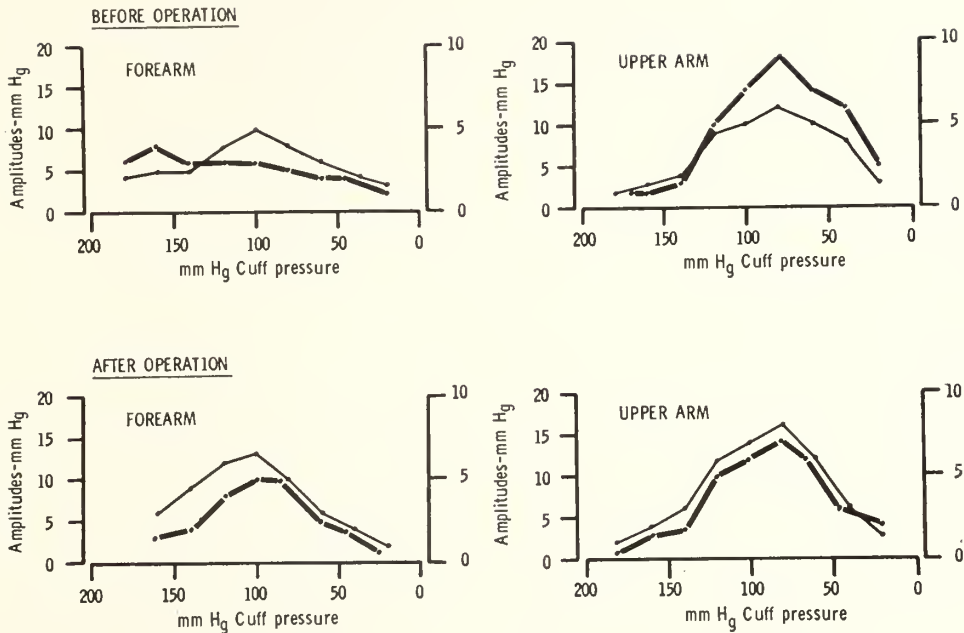


Fig. 3. Oscillometry graphs indicating the pulse volume of the large arteries of the left arm (broken line) were diminished prior to operation and restored toward normal after operation.

In the case cited, arteriography was used during operation to assess the nature and extent of the pathologic process and the adequacy of treatment. In the postoperative course of the patient other means can be used to spare the patient the time and possible discomfort of arteriography. In the occasional case, arteriography is not feasible as a follow-up measure.

Presently, there are even more discrete modes of vascular evaluation being developed at the Medical University. A direct quantitation of blood flow in the capillary bed is being evaluated. Radioactive xenon clearances are being used for muscle evaluation. Radioactive iodine is being currently used to study blood flow in the liver. As another means of providing information regarding blood flow to human skin, a computer is analyzing the data provided by the thermograph.

It is felt that vascular surgery is now a well established method of therapy, well

standardized and well exercised by most fully trained surgeons. The field of vascular surgery will continue to improve, perhaps not as dramatically as in the past, but continuously so long as physicians seek to improve the hemodynamics of their patients. It is the purpose of this article to state that the future improvements will benefit by objective evaluation of the disease and objective evaluation of current and new modes of therapy.

Summary

The surgical treatment of vascular diseases has evolved to the extent of permitting standard operations for categorical lesions. The continued improvement in the field of vascular surgery will depend upon the accurate, objective assessment of tissue perfusion before and after operative procedures. Current techniques of assessing the vascular characteristics of the human extremity are exemplified in a case of surgical treatment of radial artery thrombosis.

ESOPHAGEAL REPLACEMENT

WITH INTERPOSED JEJUNUM

JACK E. ARRANTS, M.D.
DALLAS H. DALTON, JR., M.D.
PETER HAIRSTON, M.D.
WILLIAM H. LEE, JR., M.D.

Esophageal surgery began in the latter part of the nineteenth century when Billroth excised a portion of the canine cervical esophagus in 1874. This subsequently was done successfully in humans by Czerny. Following these localized esophageal resections, Bircher, in 1894, created an antethoracic subcutaneous skin tube between the upper esophagus and the stomach to bypass an obstructive lesion. This was a multistaged operation, and others (Fing, Henschen, and Beck, Carrell, A. Jianu, Halpern and Rutkowski) modified the procedure by utilizing various types of skin flaps.

Cezar Roux early recognized that the intestine could be transposed to bypass the thoracic esophagus, and in 1907, utilized a portion of jejunum to circumvent an esophageal stricture. Other portions of intestine were suggested subsequently for esophageal substitution, (i.e., colon by Vulliet & Kelling, and stomach by Kirschner). The reconstructive procedures continued to require multiple operations and were in the antethoracic position.

The thoracic esophagus was considered unresectable until 1913, when Torek¹ performed an esophagectomy for carcinoma in a 67 year old female. He did not, however, attempt to reconstruct the esophageal defect and the patient was left with

a cervical fistula and gastrostomy. She achieved alimentation by connecting a tube between the two fistulae. No significant advances were made in esophageal surgery for the next 25 years until Adams and Phemister,² in 1938, performed the first successful esophagogastrostomy in this country. (An esophagogastrostomy for carcinoma of the fundus of the stomach had been done by Zaijer³ in 1913 through the thoracoabdominal approach; however, the patient lived only several months.)

Esophagogastrostomy was the operation of choice until 1953, when Montenegro⁴ reported the use of the transverse colon for bypass of benign disease. Both ascending and descending colon were soon found acceptable as a conduit. During this period the jejunum again received attention as a means of esophageal reconstruction. Credit for its use is attributed to the work of Yudin,⁵ Harrison,⁶ Jezioro,⁷ and Merendino.⁸ Because of its precarious blood supply, the jejunum has not received widespread enthusiasm in esophageal replacement. In 1964, Kasia⁹ reported a method of developing a jejunal graft with a vascular pedicle to reconstruct the cervical esophagus.

Clinical Material and Methods

Since 1966, 17 patients have undergone operation at the Medical University of South Carolina for reconstruction of the

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esophagus, utilizing a modification of Kasai's technique. Three of these patients have had only bypass with some type of associated esophagectomy. Carcinoma was the indication for operation in 14 of these cases.

Table 1
Extent Of Operation

Substernal bypass	2
Bypass with bronchoesophageal fistula	1
Lower one-third	3
Segmental	1
Middle and lower one-third	3
Partial gastrectomy plus middle & lower one third	2
Thoracic esophagectomy	4
Cervical esophagectomy	1

All operations were done as a one stage procedure. Two separate incisions were utilized. An abdominal incision was used for the construction of the pedicled jejunum and a separate incision, usually a right thoracotomy, for resection of the esophagus. If substernal bypass alone was done, a neck incision was used in lieu of the thoracotomy. After the pedicled graft was completed it was then passed in an isoperistaltic manner through the enlarged esophageal hiatus or substernal tunnel. The distal end of the esophagus was anastomosed to the proximal jejunum, and the distal jejunum to the stomach. In all operations, concomitant vagotomy and pyloroplasty were done. The jejunal segment was decompressed for several days with an indwelling Levine tube.

Table 2
Complications

Necrosis of jejunum (Successful esophagogastrostomy)	1
Wound infection	3
Obstruction of diaphragm (Required reoperation)	1
Stricture	2
Anastomotic leak with empyema	1

Complications varied; however, in only one case was ischemia of the translocated jejunum encountered, (Table 2). In this case the transplanted jejunum was noted to be dusky at the end of the procedure, and at reoperation the following day, it

was found to be necrotic. A successful esophagogastrostomy was then performed. Two strictures occurred, but responded to dilatations. One anastomotic leak developed with resultant empyema. This healed with conservative management. Of particular interest is one case in which an obstruction developed at the level of the diaphragm. This required a second operation to enlarge the esophageal hiatus. Three wound infections occurred; all responded to nonoperative therapy.

Three deaths occurred, (Table 3) giving a mortality rate of 17.6%. All three died more than one week postoperatively.

Table 3
DEATHS

Erosion of innominate artery by clavicle
Cardiopulmonary
Questionable subphrenic abscess (no necropsy)

Death in one patient resulted from erosion of the innominate artery from the under-surface of a partially resected right clavicle, (Table 3) at the time of cervical esophagectomy and a laryngectomy. The other two deaths were the result of cardiorespiratory failure and questionable subphrenic abscess, respectively.

All patients have been followed period-



Fig. 1. Barium swallow of a 64 year old male, three (3) months post operative jejunal interposition, is interpreted as typical interposed jejunum.

ically with barium swallow. (Fig. 1) and/or cine esophagogram. These have been correlated with clinical response as measured by dysphagia and impairment of weight gain. After the immediate post-operative period, all patients except one have been able to eat solid foods without distress.

Summary and Conclusion

Seventeen patients requiring esophageal resection and reconstruction have been treated by using a jejunal pedicled loop for esophageal substitutes. Mortality of the procedure was 17%. A good functional result was obtained in all except one of the survivors. We conclude that utilization of a pedicled jejunal loop comprises a functionally satisfactory surgical maneuver for esophageal replacement or recon-

struction, with a reasonable operative mortality risk.

Theoretical advantages of the jejunal loop over the other methods of reconstruction include:

- (1) Peristaltic activity is continuous in the isolated segment.
- (2) Because of preservations of peristaltic functions, the postoperative "dumping" syndrome may be reduced.
- (3) Reflux is minimized by the segment being isoperistaltic and having rhythmic contractions.
- (4) The luminal size compares favorably to that of the esophagus. Its main disadvantage, however, continues to be the precarious blood supply to the transplanted segment.

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PNEUMOTHORAX IN THE NEWBORN

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ELEAS F. LAWANDALES, M.D.
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Spontaneous pneumothorax is an unusual complication in the newborn. Two cases occurring within a short interval prompted us to review this subject. The true incidence is probably not known, as routine chest roentgenograms on newborns are not standard in most hospitals. A small pneumothorax can be asymptomatic. Davis and Stevens⁵ obtained chest roentgenograms on 702 consecutive newborns and found six to have pneumothorax, an incidence of almost 1%. Chernick and Avery⁴ reported an incidence of .05%. All of their 15 patients were symptomatic within 24 hours of birth. Ashmore¹ reported on nine cases treated at the Vancouver General Hospital during a ten year period. Chasler³ found 36 cases of pneumothorax and pneumomediastinum in 80,000 babies delivered at the Magee-Womens Hospital in Pittsburgh from 1948 to 1962, an incidence of .04%. Harris⁶ reported on pneumothorax occurring in 10 of 12,377 infants born at St. Mary's Hospital during an eight year period. The incidence in the hospitals in Charleston is not known. Personal inquiry of the pediatricians suggests a low incidence.

Case 1 Baby T was a 7 pound 1 ounce girl delivered spontaneously on Aug. 25, 1967 following a normal pregnancy and labor. The obstetrician noted that the infant had aspirated amniotic fluid, as evidenced by thick meconium-stained fluid in the pharynx. Apgar score was six at one minute. The infant's color and respiration became normal after suction and administration of oxygen.

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At three hours of age, respiration became rapid, substernal retraction was noticed, and the child's color became dusky. Oxygen and antibiotics were administered and she improved markedly. At 12 hours of age, respiration became labored again. A chest roentgenogram revealed a 50% pneumothorax on the left and bilateral, coarse, patchy densities compatible with aspiration. (Fig. 1)

A thoracentesis was done with the removal of 40 ml of air. The respiratory distress was relieved and subsequent chest x-ray films revealed only a small residual pneumothorax and progressive clearing of the patchy densities. The residual air had absorbed and the lungs were clear when the infant was discharged at one week of age.



Fig. 1. A 50% pneumothorax is present on the left. Coarse, patchy densities are present throughout both lung fields.

Comment

The observation that this otherwise healthy child had aspirated amniotic fluid at birth and that there was meconium stain in the pharynx is significant, as brought out in the discussion. This material is believed to cause a temporary bronchial obstruction that creates an ab-

normal pressure in the alveoli when the child cries or coughs vigorously.

Case 2 Baby C was a 5 pound 5 ounce boy born by spontaneous delivery Dec. 18, 1967. Grunting respirations, a dusky color, and moderate sternal retraction were noted immediately after birth. The lungs seemed aerated on physical examination and initially no rales were audible. He was placed in a preheated Isolette with a high concentration of oxygen. Seven hours following birth, an apneic episode occurred and this responded slowly to naso-pharyngeal aspiration and mouth to mouth breathing. Labored respirations continued and cyanosis was intermittent. Heart sounds were good.

A chest x-ray film revealed findings consistent with hyaline membrane disease and a left pneumothorax. (Fig. 2) Thoracentesis was done with removal of 80 ml of air. This did not bring about improvement in general condition and did not relieve the respiratory distress. Another apneic episode occurred and thoracentesis was repeated, but only a small amount of air was aspirated. Another chest film revealed no pneumothorax, but the dense lung fields persisted. After a downhill course, death occurred at 37 hours of age with an apneic episode that could not be relieved. The pathological findings at autopsy confirmed the clinical impression of hyaline membrane disease.



Fig. 2. A fine, punctate increase in density is present throughout both lung fields. Pneumothorax is present on the left.

Comment

It is certainly plausible in this case that intratracheal pressure could have been high enough during the resuscitative efforts to rupture alveoli. Air could thus have escaped directly into the pleural cavity or dissected along the pulmonary

vessels to the mediastinum and then perforated the mediastinal pleura.

Pathogenesis

Although there are numerous causes of pneumothorax in the newborn, there is a large group of cases in which the antecedent cause is not apparent. Certain obvious causes are pleural blebs, tracheal obstruction, atelectasis, forceful efforts at resuscitation, parenchymal disease, birth trauma with rib and clavicle fractures, and infection. Chasler³ called attention to the frequency of obstetrical problems as an antecedent cause occurring in 29 of 36 cases reported. Three of five cases reported by France and Gordon⁷ had obstructive atelectasis secondary to asphyxia. Oztalay and Beard¹³ investigated resuscitative measures as a cause and recorded intratracheal pressures in excess of those necessary for initial expansion when oxygen was being administered through nasal catheters. They believed that these high pressures played an important role in their ten reported cases.

The healthy infant who develops spontaneous pneumothorax for no apparent reason has been the subject of much laboratory and clinical investigation and most authorities now agree that the condition is initiated by a partial or complete obstruction of a bronchus with amniotic fluid, mucus, or meconium. This can occur in utero or during the first few breaths. In 8 of 15 infants reported by Chernick and Avery,⁴ the probability of aspiration of blood, meconium, or squamous debris was evident.

Emery⁶ presented clinical and pathological data on 14 newborn infants who died as a result of spontaneous interstitial emphysema of the lung and mediastinum. Keratinized material derived from the skin was found in the small air passages. The respiratory blocking appeared to be due to mucus and inhaled amniotic debris, and the expiratory force that of lusty crying.

Avery² believes that a partial obstruction of a bronchiole or small bronchus may result in a small ball-valve mechanism. A sudden maximal inspiratory effort might fully distend an airspace distal to the obstruction, and the next forced expiration fail to empty it. In time, a forcible inspiratory effort, such as accompanies a cry, could result in rupture of such an airspace. Karlburg¹⁰ has shown that the normal newborn infant applies transient pressures of 40 to 80, and sometimes even 100 cm water with the first breath. With these pressures necessary to open alveoli, it is obvious that high pressures could build up distal to a partial obstruction.

Macklin,¹¹ in his classical and well accepted studies, demonstrated that air leak may break through from overdistended alveoli of the lung into the underlying pulmonary perivascular sheaths and dissect along these sheaths to the mediastinum. This was demonstrated in animals in which air was blown through a catheter into a local part of the lung. This air is believed to dissect into the mediastinum and rupture the mediastinal pleura.

Relationship of pulmonary interstitial emphysema, pneumomediastinum, and pneumothorax

There seems to be a definite relationship between pulmonary interstitial emphysema, pneumomediastinum, and pneumothorax in the newborn. It seems likely that these entities are all part of one pathological process initiated by rupture of alveoli. Of the 36 cases reported by Chasler,³ 50% had pneumomediastinum, 20% pneumothorax alone, and 30% had both conditions concomitantly. Three of the cases reported by Howie and Weed⁹ also tend to support this concept. Lubchenco¹² included in his series of 27 cases two cases of pulmonary emphysema and three cases of pneumomediastinum, since he believed that these were variants of the same process that causes pneumothorax in the newborn.

Prematurity

The problem of prematurity naturally arises when considering newborn complications. Lubchenco¹² noted that 17 of the 27 newborns in his group were premature, an incidence of 63%. The unusual feature was that there was an inverse relationship between birth weight and age at onset. The infants with birth weights of 1,500 grams or less averaged 24 days of age at the onset of spontaneous pneumothorax, whereas the full-term infants developed the disease in the immediate newborn period.

Diagnosis

One should remain aware that pneumothorax may be present in any infant experiencing respiratory distress. Signs and symptoms will vary in severity and might range from minor irritability, restlessness, and increasing respiratory rate to overt labored respirations accompanied by rib and sternal retraction, cyanosis, stridor, and apnea. The immature infant may show cyanosis or apneic spells alternating with alertness. A tension pneumothorax can cause an infant's condition to deteriorate rapidly. The absence of breath sounds and hyperresonance are pathognomonic. Shifting of the cardiac impulse and subcutaneous emphysema may occur. Roentgenograms demonstrate pneumothorax well in the posterior-anterior view but multiple views are often necessary to demonstrate pneumomediastinum.

Treatment

Treatment depends upon the type of pneumothorax present. A tension pneumothorax must be relieved immediately. If the infant is in severe distress and the signs are absolute, aspiration should be done without the delay to obtain a roentgenogram. Recurrent pneumothorax usually requires relief by tube thoracostomy connected to an underwater seal drainage. Suction of 10-20 cm of water might be required if a significant air leak exists.

The asymptomatic infant with a small pneumothorax can be watched carefully with frequent determination of vital signs. Gentle suction to clear air passages is important. An atmosphere of high oxygen concentration and antibiotics are recommended for support. Investigation of antecedent causes is mandatory. Those infants who have interstitial pulmonary emphysema and pneumomediastinum should likewise be given supportive care

and observed carefully for progression or development of pneumothorax.

Summary

Two cases of pneumothorax occurring in newborn infants are reported. One infant had no apparent antecedent cause, while the other had the clinical and radiographic features of hyaline membrane disease. The former survived and the latter died. The incidence, pathogenesis, diagnosis, and treatment are discussed.

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50 YEARS AGO



August 1919

An editorial discussed the reorganization of old hospitals and erection of new ones over the state. It pointed to advertisements in the *Journal* of the Chick Springs Sanitarium and Steedly Clinic, the Chester Sanatorium and The Pryor Hospital. It referred also to recent hospital organizations in Abbeville, Spartanburg, Orangeburg, Columbia and Union. Dr. R. M. Pollitzer of Charleston appeared again with an article on "Anemia in Childhood."

X-RAY FILM OF THE MONTH

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The film of the pelvis illustrated is that of a 54 year old colored male who six years previously had suffered a stroke. His only residuum was a slight limp but his general activity had been noticeably curtailed. Two weeks previous to this film he was catheterized for a distended bladder. His admission to the hospital was precipitated by onset of gross hematuria, at which time this film was obtained. The upper urinary tract system bilaterally was found to be normal.

The opaque areas are a rather striking example of bladder calculi. The group on the right were found at surgery to lie in a large diverticulum. The large calculus seen on the left is within the bladder lumen. The bladder neck was constricted due to benign prostatic hypertrophy.

Bladder calculi are commonly seen in adult males. They arise primarily as a result of stasis, infection, or a foreign

body. They may arise secondarily from calculi passed from the kidneys. Stasis is considered the most common cause and not infrequently one may find the calculi within diverticula where they may be firmly imbedded.

The type of stones found in the bladder vary accordingly to the pH of the urine, what type of organisms may be present in an infection, and apparently other factors. Although foreign bodies can be the core on which salts are deposited to form calculi, at times one will see foreign bodies present in the bladder for years without the formation of calculi.

As the stones may be either radio-opaque or radio-lucent, one may need to perform both air cystograms as well as radio-opaque cystograms to make the diagnosis. On the plain films, unless one keeps them in mind, bladder calculi may be readily overlooked, usually being mistaken for fecal material in the colon.



President's Page

The osteopath fight is now history. The legislature in its closing hours passed the act. It gives full privileges to practice medicine and surgery and to prescribe narcotics. The act plans an osteopath on the present board of examiners. He is to examine only in osteopathy.

All this points up to an area in which the SCMA is sadly deficient, that is in rapport with the General Assembly. It is an area in which the county medical society and the individual physician can be most useful.

If the county society would assist in the election of people to the legislature that are at least sympathetic to our philosophy, then and only then, can we be heard. This will take time, but it is the only effective way to be heard and perhaps listened to.

The regional advisory group of the South Carolina Regional Medical Program (SCRMP) deserves special mention. Its purpose:

"Through grants, to encourage and assist in the establishment of regional cooperative arrangements among medical schools, research institutions, and hospitals for research and training (including continuing education) and for related demonstrations of patient care in the fields of heart disease, cancer, stroke, and related diseases.

To afford to the medical profession and the medical institutions of South Carolina, through such cooperative arrangements, the opportunity of making available to their patients the latest advances in the diagnosis and treatment of these diseases; and

By these means, to improve generally the health manpower and facilities available in South Carolina, and to accomplish these ends without interfering with the patterns, or the methods of financing, of patient care or professional practice, or with the administration of hospitals, and in cooperation with practicing physicians, medical center officials, hospital administrators, and representatives from appropriate voluntary health agencies."

"The functions of the Regional Advisory Group will be: (1) To involve the South Carolina Medical Association and local medical societies, the South Carolina Hospital Association, the South Carolina Heart Association and local units, the South Carolina Division of the American Cancer Society and local units, the South Carolina State Board of Health, and other agencies, institutions, and organizations in order to secure their full cooperation in the implementation of the South Carolina Regional Medical Program, (2) To review results and make recommendations on surveys which relate to the needs of the region and its component areas."

The above are the main functions. The remainder are for implementation.

The regional medical group has 53 members. It is under extremely able leadership. The SCMA and the local societies can profit by it, and in turn, by lending their great support, benefit the program, ourselves individually, and the patient for whom it is designed.

Special comment to the committee on post graduate education of the SCMA. The members of this committee are also members of the committee on continuing education. This liaison is excellent.

Interest on the local level in these projects and programs is strongly urged.

William L. Perry, M.D., President

Editorials

For Want of a Quarter

Apparently many physicians are unaware of a provision in the South Carolina Code of Laws (1962) that they are not considered legally as "lawful practicing physicians" until they have registered with their clerk of court and paid a fee of twenty-five cents. For lack of such registration several doctors have been disqualified as expert witnesses by the keen legal maneuvering of smart lawyers. It might well be that difficulties could arise from many other sources.

To remove this piddling provision and thereby to safeguard the negligent physician, Senator Frank Owens and others have introduced a bill to repeal the statute. A reasonable legislature should certainly go along with this proposal.

"For want of a nail, the shoe was lost; for want of a shoe the horse was lost; and for want of a horse the rider was lost."

Poor Richards Almanac

The Chiselers

At a time when medicine needs no new critics, an unscrupulous but minor element of the profession has done great harm to our public image by gouging the federal and state funds of the Medicare and Medicaid programs. No matter how few these offenders are, they are physicians, and the good name of all physicians is tarnished by their actions. Their number is reported variably, but every state has its share of trespassers on public funds.

The Association has expressed its opinion of such undersirable behavior, and has stated its intention to do all that it can to correct the situation. In order to take specific action it must have specific charges, and these have not yet been made. Strict review of the conduct of physicians under suspicion must be made by the county medical societies, who are in

the best position to get at facts and circumstances.

There is no doubt that the vast majority of physicians deplore the behavior of the few, and that organized medicine stands ready to take whatever action is indicated.

Light in Darkness

In its campaign to reduce accidents, the American Academy of Pediatrics is recommending that light-reflecting tags or materials be used by children wearing dark clothing at night. This advice aims to reduce the 1,000 accidents attributed annually to poor visibility during evening hours.

This arrangement might well be extended to persons of other ages. Even the Navy might take notice. If there is anything harder to see at night than a black skinned sailor in dark blue uniform, we find it difficult to visualize.

Cruelty Beyond The Call of Duty

It is reported that the Air Force has banned smoking by patients in all its medical establishments.

While the harmful results of smoking seem well documented circumstantially, it seems difficult to conceive of serious ill effects from tobacco for patients confined briefly to hospitals, and it also seems clear that prohibition of smoking may take away from a patient a small (or large!) comfort in a situation where comfort is badly needed.

Illogically, less concern is shown for the health of hospital staff members or physicians, who are permitted to (possibly) ruin their health by indulging freely in the noxious weed.

The AMA and The Secretary of HEW

If the reason for the recent strong opposition of the AMA to the appointment of Dr. Knowles is not clear, the following

may shed some light on the circumstances.

A Planning Committee of AMA which includes Dr. Knowles of Massachusetts, headed by Dr. Himler of New York, has prepared a 60 page report to the Board. It is amazing and unbelievable. It contains many suggestions for the control of doctors.

Briefly, it recommends authoritarianism; fixed fees; "the Committee would again emphasize that the Association must abandon its public and exclusive support for existing delivery systems and avoid use of the terms 'private practice,' 'fee-for-service payment,' and 'free choice'."

It recommends that AMA adopt the World Health Organization definition of health:

"Health is a state of complete physical, mental, and social well being and not merely the absence of disease or infirmity."

It also makes many basic assertions upon which it predicates the recommendations. Some of these assertions are:

"... the majority of the people look to government" [for satisfaction of their expectations].

"... the private sector discovered that they have neither the *funds* nor the *authority* to plan and implement the programs that are required if public aspirations are to be met [The thesis that every human being has a right to all needed health services ... is now generally accepted]."

The Committee therefore recommends that:

"(2) ... The Association promulgate a 'Health Bill of Rights' to identify the services to comprise comprehensive health care.

"(3) ... establish minimum standards for health care and a system of priorities ...

"(4) 'The Bill of Rights,' the data and the standards and priorities receive wide publicity."

Although it points out the need to study the forces that are influencing the practice of medicine, it dismisses the real forces at work by saying:

"There are those who will argue that the demand for these was not spontaneous but was deliberately aroused and nurtured by those in government whose political philosophies incline toward the creation of a paternalistic, or even a socialist, state. There may be some truth in this belief, but it is idle to speculate on where the rise in expectations originated. The fact is that the public appetite has been whetted and, more significantly, that the majority of the people look to government for its satisfaction."

This completely ignores the Fabian conspiracy which engineered total nationalized medicine in Britain and the League for Industrial Democracy in the United States which is a blood relative of the British Fabians. It ignores the manipulation of AMA by Walter Reuther through the Council on Medical Service, Blue Cross, Blue Shield, etc. It also ignores the activities for nationalized medicine by the National Education Association, the National Council of Churches, the media, etc. Fundamental forces have been ignored. Acceptance of government intervention permeates the entire document. It asks the medical profession to surrender the principles of individual freedom, responsibility, and independence which distinguishes the United States from European countries which have embraced collectivist authoritarianism.

This is the most clear, extensive statement of the peril to medicine that has ever appeared by an organization presumably designed to protect the freedom of doctors and their patients.

The Facts of Political Life

In recent months, during discussions about South Carolina Osteopathic Practice legislation, one of the most frequent

comments I heard was essentially the following: "I don't see how 4 osteopaths can have more influence with our Legislature than 1,800 doctors." Of course, a number of factors are involved. Full practice privileges for osteopaths in 44 other states, the recognition of osteopaths as physicians by the Armed Forces, and recent AMA policy statements all have played their part. However, I believe by far the most important factor has been that one osteopath has attended the Legislature while it has been in session almost constantly for the past several years. He knows all the legislators, and they know him on a first name basis. He is friendly, charming, and urbane. Even our dwindling number of friends in the Legislature like him and respect him. As that old quatrain of Alexander Pope goes:

"Vice is a monster of so frightful mien;
As to be hated, needs but to be seen;
Yet seen too oft, familiar with her face;
We first endure, then pity, then embrace."

Obviously none of us can afford to spend all our time attending the entire session of the Legislature as this man does. However, his example does raise a number of questions that every physician in South Carolina should ask himself.

- (1) Do you know the names of your Representatives and Senators, both on the national and state level?
- (2) Do you know or have on file their addresses and telephone numbers?
- (3) Do you know them personally?
- (4) Do you communicate with them reasonably frequently, letting them know your views not only on subjects of medical interest but of interest to every good citizen?
- (5) Do you thank them when they have helped you out? Do you compliment them when they have accomplished something worthwhile? Most legislators I know tell me that praise is one of the rarest commodities a public servant ever receives.
- (6) In primaries and elections, do you

back the candidate of your choice with time, money, and effort? Political campaigns become more strenuous, sophisticated, and expensive each year.

The amount of influence that you will have on a legislator depends in direct proportion to the number of times you can answer "yes" to the above question. Legislators are like everybody else. They tend to listen to and respect the opinions of people they know and trust. The fact that you are a doctor will probably command a little more respectful attention than that of someone else, but not necessarily so. It is always easier to get an attentive and fruitful hearing from a legislator whom you know personally, whom you write or talk to frequently, and whose campaign you supported. I do not mean to imply that you should bribe legislators. Almost all of them are conscientious hard-working people whom you can't bribe. You don't really want the kind that you can bribe anyhow. Because whatever you can pay, someone else can always pay more.

At this point, I can hear somebody saying, "Here comes another pitch for SCALPEL." You are wrong, my friend. SCALPEL is only part of the story. What I am asking for is a more complete involvement by all physicians in South Carolina. It is true that your money for SCALPEL supports candidates both in South Carolina and in other states who feel as we do about the practice of medicine and health care problems. It supports both Democrats and Republicans on the basis of their voting record, not their political party. Of course, there are those who won't even contribute to SCALPEL. They say, "I'm above politics. I spend all my time trying to get people well. Don't bother me with politics." All right, doctor, I won't bother you with politics, but there are national and state health programs constantly before our legislators; and you'd better believe that these programs will bother you. They will take your time and plenty of it. They will also take your money—by fore-

ing you to hire more help to fill out insurance forms, increase your malpractice insurance rates, increase your business tax, employer's tax, etc. Does this improve your patient care?

Some time ago, a friend whom I respect was assessing another fellow physician. The comment was made that this physician was "something of a medical politician." The man described was a highly regarded and competent physician who, by reason of his elected position as a leader in a medical society, found himself in the middle of many questions and problems that were not strictly scientific. I've heard this comment off and on many times before and since. The critic is usually an ivory tower "purist" who takes great pride in being a physician and scientist totally removed from all other aspects of medicine. He makes the flimsy assumption that the responsibility of direction and leadership in a professional body, because it is not completely scientific, requires less talent and effort. Therefore the academy president, the medical society leader, the heart or cancer fund chairman is labeled a "medical politician." Many years ago, Reverend Price Hughes said, "You cannot help being a politician. You cannot live for an hour without being a politician. But what a man generally means when he says that he is not a politician is this—that all his life he has been enjoying his political privileges and grossly neglecting his political duties; and in that sense the observation is scarcely to his credit. As a matter of fact, politics, properly understood, is simply the Science of Life—the doctrine of the way in which I am to do my duty to my neighbor."

I believe that it is time that we recognize the importance of those in medicine

who take valuable time out of an active professional life to "involve" themselves. Not for reasons of self-glorification, personal egotism, or selfish gain, but in the spirit of *noblesse oblige*. The medical politician owes no apologies to the "medical purist." It is possible to be a medical politician without professional deterioration, reduction in standards, sacrifice in principles, or diminished interest in service to patients. The next time you criticise a person for being a medical politician, think about this for just a while. He's doing a job that you can't or won't do yourself.

Many years ago, Theodore Roosevelt received a letter from a friend criticising an appointee of Roosevelt who was trying to do a good job under difficult circumstances. The critic previously had been offered a chance at the same job himself by Roosevelt and had turned down the position. Roosevelt pointed this out to him in very forceful words: "It is not the critic who counts, not the man who points out how the strong man stumbled or where the doers of deeds could have done them better. The credit belongs to the man who is actually in the arena, whose face is marred by dust and sweat and blood; who strives valiantly; who errs, and comes short again and again because there is no effort without error and shortcoming; but who does actually strive to do the deed; who knows the great enthusiasms, the great devotions; who spends himself in a worthy cause; who at the best knows in the end the triumph of high achievement; and who at the worst, if he fails, at least fails while daring greatly, so that his place shall never be with those cold and timid souls who know neither victory nor defeat."

Donald G. Kilgore, M.D.

**ABSTRACT OF MINUTES OF COUNCIL
SOUTH CAROLINA MEDICAL ASSOCIATION**

Columbia, South Carolina Wednesday, June 18, 1969

The South Carolina Medical Association Council met at the Blue Cross-Blue Shield Headquarters on June 18, 1969, at 2:00 p.m.

Dr. Hope requested Council's sanction of the action taken in regard to the committee headed by Dr. J. Howard Stokes, which committee recommended that the Executive Secretary's salary be raised from \$15,000 to \$22,500 annually, effective May 15, 1969, with the understanding that Mr. Meadors will devote as much of his time to his duties as Executive Secretary of SCMA as is necessary. Dr. D. Strother Pope moved that the committee's report be accepted and expedited. Motion carried.

Mr. Meadors thanked Council for its action in regard to his duties and salary and stated that he had already asked all county societies for lists of their meeting dates and had received responses from the majority. It is his intention to make appointments to attend as many of these as possible to bring to their attention the program of the Association and related affairs.

Mr. Meadors announced that he received a letter from Mr. "Art" Bushhouse Public Health Service Officer with the State Board of Health, stating that Dr. Edmund Taylor, Department of HEW, Atlanta Regional Office, had proposed holding seminars in South Carolina for the purpose of instructing emergency room personnel in various phases of caring for accident and seriously ill patients, the financial portion of which would come from HEW. He recommends at least two seminars annually—one in the upper part of the State and one in the lower part. It is hoped that this would tend to upgrade the skills of emergency room personnel.

Dr. J. Harvey Atwill, Jr., moved that Council receive this as information and that it be suggested to Mr. Bushhouse that he contact the State Hospital Association as this seems to be a matter for them and not for SCMA primarily. Motion carried.

SCMA's stand on physicians abusing the Medicare or Medicaid programs and the advisability of issuing a firm and convincing statement regarding same was sanctioned.

Mr. Meadors was asked to look into the feasibility of changing the annual meetings from the Ocean Forest Hotel.

Dr. James B. Galloway gave a most informative report on the National Conference of State Medical Association Representatives on Continuing Medical Education. Dr. Perry moved that a representative from the Regional Medical Program and a representative from the Medical College work with the Medical Education Committee on this program. Motion carried.

Mr. Thomas Sawyer, Assistant Director of Field Service, AMA, Atlanta, Georgia, appeared before

Council. Mr. Sawyer brought greetings from AMA and discussed the upcoming AMA convention.

Dr. Joseph P. Cain, Jr., moved that the Board of Medical Examiners be requested to write each county society telling them what the Board needs in order to prosecute a physician who has been dropped from a hospital or a county society for malpractice, etc. Motion carried.

Council asked Dr. A. Richard Johnston to serve as the liaison man between Council and the Board of Medical Examiners. Dr. Johnston accepted.

Dr. J. H. Young, Dr. William S. Hall, Dr. Raymond K. O'Cain, Dr. D. Lamar Lee, and Dr. Travis B. Stevenson, Jr., were appointed by the President as a committee to work with the Nurses Association.

Dr. Perry said that during a conference he had with the Governor, Governor McNair had indicated he would like a committee from SCMA to work with Title XIX. This committee is to be appointed by the President.

Dr. John C. Hawk, Jr., reported on an areawide Comprehensive Health Planning meeting which he and Dr. Perry attended. In connection with his report, it was noted that somebody from the medical profession should attend meetings of this sort although no member of Council had been invited.

A committee on Coordinating Benefits is to be appointed by the President.

Mr. M. L. Meadors commented on the status of pending legislation on licensing osteopaths and the Uniform Anatomical Gift Act.

Dr. Kilgore reported on a hearing concerning licensing laboratories in the State at which hearing Dr. Ben N. Miller testified.

Dr. John C. Hawk, Jr., commented on the weekly letter from AMA and suggested that many physicians would find same interesting. Any AMA member may receive this letter by requesting same.

The President appointed the following Awards Committee: Dr. Hugh E. Smith, Orangeburg, Dr. John P. Booker, Walhalla, Dr. Harold P. Hope, Union, Dr. William H. Prioleau, Charleston, and Dr. William L. Perry, Chesterfield.

Dr. Perry moved that he, as President, write and thank members retiring from various committees for their services. Dr. Kilgore seconded. Motion carried.

The Executive Secretary is to notify members of their appointment to committees instead of the Secretary as has been the custom.

The following committee appointments were made:

Committee on Scientific Program: Drs. M. Gordon Howle, Greenville, Joseph F. Flowers, Walterboro, George R. Dawson, Jr., of Florence, will succeed Drs. B. Owen Ravenel, Charleston, Edwin R. Wallace, III, Barnwell, and John C. Hawk, Jr., of Charleston.

Committee on Legislative Activities: Dr. Dexter B. Rogers, Easley, will succeed Dr. Michael F. Patton, Spartanburg. Drs. Hugh H. Wells, Seneca, and Henry L. Laffitte, Allendale, will succeed themselves.

Committee on Cooperative Activities: Dr. J. Anthony White, Easley, will succeed Dr. Harold P. Hope, Union. Drs. C. Benton Burns, Sumter, and Judson E. Hair, Clemson, will succeed themselves.

Committee on Medical Education: Dr. James P. Galloway, Columbia will succeed Dr. Dale Groom, Charleston. Dr. Joel Wyman, Anderson, will succeed Dr. J. Harvey Atwill, Jr., Orangeburg. Drs. Thomas E. Hair, Jr., Columbia, and Richard S. Pollitzer, Spartanburg, will succeed themselves.

Committee on Medical Services: Drs. Harold W. Moody, Spartanburg, and Rion M. Rutledge, Rock Hill, will succeed Drs. Charles H. Banov, Charleston, and James S. Garner, Jr., Mullins. Dr. Wyman King, Batesburg, will succeed himself.

Committee on Mental Health: Drs. Michael Holmes, Kingstree, Joseph J. Nanarello, Greenville, and William S. Hall, Columbia, will succeed themselves.

Committee on Public Relations: Drs. W. Wyman King, Jr., Newberry, and John M. Preston, Columbia, will succeed Drs. Joel W. Wyman, Anderson, and Winston Y. Godwin, Cheraw. Dr. Ralph P. Baker, Newberry, will succeed himself.

Committee on Industrial Medicine: Drs. David W. Baxley, Jr., Charleston Heights, and William J.

Goudelock, Easley, will succeed Drs. George V. Rosenberg, Abbeville, and Joseph L. Goodman, North Charleston. Dr. J. Hal Jameson will succeed himself.

Committee on Maternal Health: Drs. Herbert M. Black, Columbia, and Harrison L. Peeples, Estill, will succeed themselves.

Committee on Infant and Child Health: Dr. G. Preston Edwards, Gaffney, will succeed Dr. Frank R. Huff, St. Matthews. Drs. Jack W. Rhodes, Charleston, and Girard C. Rippey, Jr., Anderson, will succeed themselves.

Memorial Committee: Dr. Robert W. Patton, Rock Hill, will succeed the late Dr. Clay W. Evatt, Charleston.

Committee on Historical Medicine: Dr. J. Decherd Guess, Greenville, will succeed Dr. Richard Pollitzer, Spartanburg.

Committee on Constitution and By-Laws: Dr. W. Carl Walsh, Jr., Easley, will succeed the late Dr. Clay W. Evatt. Drs. Kenneth N. Owens, Aiken, Halstead M. Stone, Chester, and Joseph D. Thomas, Denmark, will succeed Dr. Swift C. Black, Dillon, Wallis D. Cone, Sumter, and William A. Wallace, Spartanburg.

Dr. Edward F. Parker, Charleston, or Dr. Henry C. Robertson, Jr., Charleston, is to be recommended for the Hospital Advisory Council to the State Board of Health, to replace the late Dr. Thomas C. McFall.

D. Strother Pope, M.D., Secretary

SCMA Medical Advisory Committee
To
The South Carolina Vocational
Rehabilitation Department

Terms Expire May, 1970

GENERAL SURGERY

Dr. J. Kilgo Webb, Greenville

INTERNAL MEDICINE

Dr. Benton M. Montgomery, Newberry

NEUROLOGY

Dr. Luther C. Martin, Charleston

OPHTHALMOLOGY

Dr. J. Howard Stokes, Florence

Terms Expire May, 1971

GENERAL SURGERY

Dr. Harry J. Metropol, Columbia

OTOLARYNGOLOGY

Dr. James M. Timmons, Columbia

PSYCHIATRY

Dr. Robert N. Milling, Columbia

Terms Expire May, 1972

ANESTHESIOLOGY

Dr. Elgar P. Ellis, Jr., Anderson

GENERAL PRACTICE

Dr. Malcolm L. Marion, Chester

INTERNAL MEDICINE

Dr. Peter C. Gazes, Charleston

ORTHOPEDICS

Dr. Francis H. Gay, Columbia

UROLOGY

Dr. Charlton P. Armstrong, Greenville

STATE HEALTH OFFICER

Dr. E. Kenneth Aycock, Columbia

STATE MEDICAL CONSULTANT CHAIRMAN

Dr. Ben N. Miller, Columbia



Dr. Walton L. Ector, Dr. William B. Gamble Jr. and Dr. Jack W. Rhodes of Charleston have announced the association of Dr. Robert F. Marion Jr. for the practice of pediatrics at 1243 Savannah Highway, Charleston. Dr. Leta White and Dr. Fred Adams have been elected directors of the Spartanburg Area Mental Health Center.

Dr. William F. Bolt, who recently resigned as director of the Anderson-Oconee-Pickens Mental Health Center, has announced that he will continue to serve the center in other phases of work. Dr. E. Kenneth Aycock, State Health Officer, is the new president of the South Carolina Public Health Assn. Dr. J. C. Hedden of Spartanburg was elected president-elect. Dr. Robert W. Ball, a native of Charleston, has retired from the S. C. State Board of Health after 41 years of service. Over the years Dr. Ball has been instrumental in the work of the state's Maternal and Child Health Program, the Crippled Children's Program and the Venereal Disease Control Program.

Dr. John Wolff has been named state disease control officer and succeeds Dr. William Johnson. Dr. Hilla Sheriff has assumed duties as chief of the Bureau of Community Health Services and has become assistant state health officer along

with Dr. Malcolm U. Dantzler. Dr. James E. Padgett Jr. has become chief of the Bureau of Maternal and Child Care. Dr. Francis X. MacAulay, a native of Boston, has accepted the position as pathologist at Mullins Hospital. He is a graduate of Holy Cross College and Boston University School of Medicine. Newly elected board of directors of the S. C. Heart Association include Dr. Grady Hendrix of Charleston, Dr. Conyers O'Bryan of Florence, Dr. Loren Parmley of Spartanburg and Dr. William C. Marett of Columbia.

Dr. David E. Koon of Garden Dale has announced his association with Dr. George Whitaker and Dr. Eugene Baker in family practice at offices on Devonshire Drive in Columbia. Dr. Russell C. Mitchell and Dr. William D. Price have announced the opening of their office for the practice of general medicine in the Professional Building in St. Andrews Center, Charleston.

Dr. J. Earle Furman, Dr. Jack W. Chandler Jr. and Dr. Watt McCain Jr. have announced the association of Dr. Thomas L. Tiller Jr. in pediatrics at Children's Clinic, 301 Anderson St., Greenville.

Dr. Hughey Crooks, rumored to have retired, is still in the practice of dermatology at his office at 200 East North Street, Greenville.

NEW MEMBERS OF SCMA

Dr. Hal H. Crosswell, Jr.
Columbia

Dr. David W. A. Neville, Jr.
Greenwood

Dr. Joseph W. Taber, Jr.

Columbia

Dr. W. Carl Walsh, Jr.

Easley

Dr. S. Nelson Weston

Columbia

A black and white portrait of a middle-aged man with glasses, wearing a suit and tie. He is looking slightly to the right of the camera. The background is a plain, light color.

Dr. Curtis Artz was the guest lecturer recently at the Illinois Surgical Society in Chicago. He spoke on "Newer Concepts in the Treatment of Duodenal Ulcer Disease." He was also awarded an honorary membership in The Illinois Surgical Society.

He received his baccalaureate from Albion College, Albion, Michigan, and his doctorate from the University of Chicago. He is a member of many national and international professional and fraternal organizations.

Dr. Worthington has been the assistant dean for curriculum for the Medical College since 1966. He is a graduate of The Citadel and the Medical College of South Carolina where he received his Doctor of Medicine degree in 1952. He has been a professor of anatomy since 1966.

The South Carolina Epilepsy Foundation has become an affiliate of the Epilepsy Foundation of America, thereby strengthening its facilities and programs for the improvement of epileptics in South Carolina.

The newly opened Hartsville Convalescent and Nursing Home Inc. is located at 714 Llewellyn Drive in Hartsville. The home has a 86 bed capacity and is approved for Medicare, Medicaid, VA and private patient care.

A SKETCH OF R. WILSON BALL

DONALD H. ROBINSON

Robert Wilson Ball, M.D., retired on June 30, 1969, after 41 years in public health. To his friends he was "Wilson" because as he told me, "There were too many Roberts in the family when I came along."

To the United States he has been for many years the mentor for trainees in venereal and infectious disease. His Venereal Disease Control Program in the Palmetto State has won national recognition; and the U. S. Public Health Service has used him and his State as a training ground for venereal disease physicians and investigators, who ultimately have gone to the four corners of the globe.

Wilson Ball started his public health career in Netumpka, Alabama, and it was in Alabama he says life began, too. I asked him what was the most dangerous and exciting thing that ever happened to him.

"I got married," he said.

This he did while in Columbiana, Alabama, to Margie: Marjorie Buhler, a social worker. Margie has come through life with him. They reared three girls, all married (two living at present) with children. Further, from time to time Margie taught sociology or worked as a social worker. About six years ago she "retired," and this year Wilson retires from the South Carolina State Board of Health.

In 1936 he joined the South Carolina health service, first as health officer for Horry County and then for Richland County, which surrounds Columbia, the state capitol.

After short stints in these locations, he joined the central office of the State Board of Health. The State Health Officer at the time, James A. Hayne, M.D., called him in and said, "Ball, I want you to start this mother and baby thing."

This began the state's Maternal and Child Health Program and R. W. Ball's long career with the Board of Health. As

the years rolled out, Dr. Ball became known for both the Crippled Children's Program and Venereal Disease Program; a strange combination of enterprises.

There was an intermission during World War II while Wilson Ball, a member of the National Guard, went off to war. He saw service in Okinawa and then in China with the Civil Affairs Section. Starting his military life as an enlisted man just after World War I, from which he was discharged as a sergeant, he received a commission in the Reserves in 1934 and transferred back to the Guard in 1939.

When Wilson Ball retired from the military, he was promoted to the rank of Brigadier General. On several occasions the Guard came into active duty, "particularly during elections in Charleston," he said.

Born and raised in Charleston, "We were raised in a row boat and a canoe," he said. "On one occasion my brother and I paddled over to Fort Johnson and found a buried Civil War cannon ball." This they lugged to the canoe and although it almost swamped the craft, paddled back to the mainland.

Dr. Ball is well versed in the dialect that natives around Charleston speak: Gullah. Some call it Geechie. No article can relay the amusement his stories give to his listeners.

Gullah resembles the lingo anyone who has lived or traveled around the Caribbean recognizes as being a mixture of African dialects and French and English. Gullah requires, nonetheless, a sharp ear and much contact to understand.

Having learned to know Wilson during the past year, I am not surprised to find a number of scientific papers to his credit. He has a way with words, Gullah or English. In retirement he plans to continue his interest in boating and wood working . . . and his exciting life with Margie.

WILLIAM S. HALL PSYCHIATRIC INSTITUTE
COLUMBIA, SOUTH CAROLINA
Continuing Education, 1969-1970

Programs :

Human Sexuality: 12 hours. October 29, 30, 1969. Symposium for practicing physicians, including psychosexual growth, development, and aberrations modes of expression and management.

Behavior Problems in Children: 12 hours. January 28, 29, 1970. Symposium for practicing physicians on the more common difficulties encountered. Includes a review of normal and abnormal neurological and psychiatric development.

Psychosomatic Medicine Symposium: 12 hours. April 1, 2, 1970. Genesis, basic principles, and the various kinds of somatic disorders resulting from maladaptive living.

In-Service Training:

The Psychiatric Examination: 8 hours a day for 3 days. A review of the basic psychiatric examination for practicing physicians. Includes supervised reading,

comprehensive medical and psychiatric history, mental status examination, and neurological evaluation, providing adequate basis for definitive diagnosis. Times scheduled by arrangement.

Basic Psychiatry: 8 hours a day for 3 days. A review that includes concepts of behavior, personality development, adaptive mechanisms, and psychopathological manifestations. Prescribed studying, clinical conferences, and seminars. Times scheduled by arrangement.

Clinical Syndromes in Psychiatry: 8 hours a day for 3 days. A review of the basic psychiatric disorders as may be expressed in behavioral, psychological, and physical symptoms with emphasis on criteria for differential diagnosis. Guided reading, audio-visual aids, clinical conferences, and seminars. Enrollees perform procedures under supervision. Times scheduled by arrangement.

Meetings

The Student American Medical Association is planning a Regional Convention for the southeast region in Charleston October 31, Nov. 1-2.

Members of the South Carolina Medical Association are invited to attend.

The Division of Maternal and Child Health of the Univ. of Calif. School of Public Health at Berkeley has announced postgraduate courses on Maternal and Child Health, Family Planning, School Health, The Multiply Handicapped and Mentally Retarded Child, and Career Development Programs. For information write Dr. H. M. Wallace, School of Public Health, Univ. of California, Berkeley, Calif. 94720.

A symposium on medicine and religion entitled "Dialogue and Dilemma," will be held at the University of North Carolina

School of Medicine in Chapel Hill Monday and Tuesday, September 8 and 9, 1969. This will be the second program bringing clergymen and physicians together for joint discussion of problems of mutual concern, and is sponsored by the Committee on Medicine and Religion of the North Carolina State Medical Society, the School of Medicine and the Department of Medicine and Religion of the American Medical Association. The program will include nationally known speakers, both physicians and clergymen, and will provide opportunity for informal discussions in small groups.

Interested clergymen and physicians are invited. Further information may be secured from:

Office of Continuation Education
U. N. C. School of Medicine
Chapel Hill, North Carolina 27514

The AMA and Medicaid

AMA has announced a 4-point program for refinement and economies in Medicaid program, emphasizing that the need in meeting health care requirements of the poor is to encourage participation by more M.D.s rather than fewer. AMA's 4 recommendations:

1. Vigorous emphasis on review by local medical societies of use made of expensive hospital and nursing home facilities. About 80% of Medicaid costs are for charges for these facilities.
2. Energetic eradication by medical profession of isolated abuses by M.D.s in making unwarranted charges or other procedures that boost costs. Some medical societies have recommended dropping from the Medicaid program any M.D. providing inadequate care or mischarging. Governments will be urged to pursue civil or criminal actions against offenders.
3. Urge all medical societies and individual M.D.s wherever possible to bring health services into low-income communities, where it will be more convenient to patients, less expensive.
4. Active review by medical societies to make certain quality of health care provided to everyone is maintained

even while cost efficiencies are effected.

In announcing the 4-point program, AMA President Dwight L. Wilbur, M.D., said holding costs of Medicaid to manageable proportions is of great concern to M.D.s, as well as to government and taxpayers. He said Medicaid cost \$3.5 billion in 1968, served 8.5 million people. In fiscal 1970, it likely will cost \$4.8 billion while serving 10.2 million. Dr. Wilbur said that while medical profession and government are moving to eradicate some abuses being found in Medicaid program, "refinements and significant economies can come only from intensive, professional attention to utilization and procedures, rather than from efforts to fix rates or freeze budgets. Otherwise, efforts to fix costs while all other elements of the economy remain uncontrolled will result in second-class health care system for the poor." Dr. Wilbur also pointed out that health care for the poor is being provided, in many cases, by professional people who incur great stress and often personal risks. "It is urgent," he said, "if this care is to be continued by dedicated people, that their incentives and support be increased. Any further burdens on them will inevitably increase the already acute scarcity of M.D.s providing services to the poor."

MEETINGS

A symposium on Pharmacology of Selected Drugs Used in Dermatology: Principles of Action and Uses is being sponsored by the Departments of Dermatology and Pharmacology of New York University School of Medicine and Post-Graduate Medical School October 29, 30, 31.

The 19th Annual Scientific Seminar of Self Memorial Hospital was scheduled for August 13 in Greenwood. The seminar is sponsored annually by the Staff of Self Memorial Hospital and the S. C. Chapter of the American Academy of General Practice.

Duke University Medical Center Newborn Symposium is scheduled for Sept. 18, 19 and 20. The symposium is being sponsored by the Dept. of Pediatrics of Duke University School of Medicine and the Maternal and Child Health Section of the North Carolina State Board of Health.

Tennessee Valley Medical Assembly will be held in Memorial Auditorium, Chattanooga October 13-14. For more information, write Dr. David H. Turner, chairman, 107 Interstate Building, Chattanooga, Tenn. 37402.



SOMETHING NEW ON TOP

Additional protection against the expenses of non-occupational illnesses or injuries is now available for your patients enrolled in Blue Cross - Blue Shield of South Carolina. It comes in a new Major Medical Expense contract, recently approved by the State Insurance Department, and offered to subscribers in amounts of \$5,000 and \$10,000, or \$10,000 and \$20,000.

Several of the largest Blue Cross - Blue Shield groups are already enrolled in the new major medical program, and their coverage is already in effect. The coverage includes out-of-hospital drugs, therapy, nursing, ambulance service and prosthetics, as well as more hospital and physicians services supplementing the basic Blue Cross - Blue Shield benefits.



Blue Cross - Blue Shield
OF SOUTH CAROLINA

THE MONTH IN WASHINGTON

The Internal Revenue Service plans to audit the federal income tax returns of physicians and other health practitioners who have received more than \$25,000 a year in Medicare and Medicaid payments.

Finance Committee Chairman Russell B. Long (D., La.) estimated "possibly as many as 10,000" had been getting upwards of \$25,000 a year under the programs. R. W. Thrower said the initial audits would be for 1967 and would be limited to those receiving more than \$50,000.

Long said that the investigation of the committee's staff so far showed "widespread abuse, and fraud, as well as lax administration."

Robert M. Ball, social security administrator, reported his investigators had looked into more than 700 possible fraud cases under Medicare. He said more than 300 of these cases were still in some stage of inquiry, and that 14 had been turned over to the Justice Department for prosecution.

"But these should not be taken as a reflection on the 200,000 doctors participating in Medicare," Ball said. He added a bigger problem than outright fraud were "cases that don't quite become fraud."

HEW Undersecretary John G. Veneman told the committee that the Nixon Administration wants congressional authority to stop Medicare payments to doctors who overcharge, use inferior supplies or engage in fraud.

"Under present medicare law, there is no authority for the program to deny reimbursement to a licensed practitioner, who has demonstrated a clear pattern of fraud, repeated overcharging of the program or the use of supplies which are inferior or harmful," Veneman said.

"We are recommending authority . . . to discontinue future reimbursement and to put all parties on notice to this effect where on the basis of clear evidence, a finding is made that this is justified by reason of such abuses."

Commenting on the hearings, Dwight

L. Wilbur, M.D., president of the American Medical Association, said that the vast majority of physicians serving Medicaid patients are not overcharging for their services.

"Most physicians," Dr. Wilbur said, "are acting honorably and with utmost restraint. Fortunately, very few M.D.'s participating in Medicaid are guilty of overcharging and otherwise exploiting the program. Such exploitation by a minuscule minority was unavoidable. . . .

"... The medical profession is making a great effort to identify and weed out dishonest doctors who betray their oath as professional men serving the public. We have been successful in this search, but a few physicians remain who still are not identified. We shall search them out and expose them, for the good of the entire profession."

Meantime, HEW issued a regulation limiting the fees paid by states to physicians, dentists and other health practitioners under Medicaid.

Under the regulation, a state's Medicaid payment to a physician for a service will be limited, with one exception, to the 75th percentile of the customary charge—the maximum customary fee of 75 per cent of the physicians in the area.

If a state has been paying more than the 75th percentile of the customary charge, it must not exceed the Medicare level, about the 83rd percentile. A Medicaid official said that only two states may have to roll back their fees, but declined to name them.

The new fee regulation also requires states to revise their Medicaid plans to include descriptions and details of their payment structures. A state that wishes to revise its payment structure for practitioners' services or change the payments authorized under it may not do so until the proposed changes have been approved by the Secretary of Health, Education and Welfare or his representative.

Despite a strong protest by the Ameri-

can Hospital Association, HEW discontinued the overhead Medicare-Medicaid percentage allowance paid to hospitals, extended care facilities and other institutional providers. It was two per cent for non-profit and one-and-one-half per cent for proprietary institutions. The action was effective July 1, 1969.

Another new Medicaid regulation requires states to provide periodic health screening, diagnosis, and treatment for all eligible youths under 21 years of age,

effective July 1, 1969.

HEW also established a new classification of institution—called intermediate care facility—eligible to receive federal contributions for the care of aged, blind, or disabled recipients or public assistance as covered in another regulation. This should reduce costs of Medicaid by allowing states to relocate substantial numbers of welfare recipients who are now in skilled nursing homes in lower cost institutions, HEW said.

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Henry B. Burton, M.D., Director, University Health Services, Appalachian State University, Boone, North Carolina 28607.

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The Journal of The SOUTH CAROLINA Medical Association

SEPTEMBER, 1969—VOL. 65 NO. 9

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Charleston, S. C. 29401

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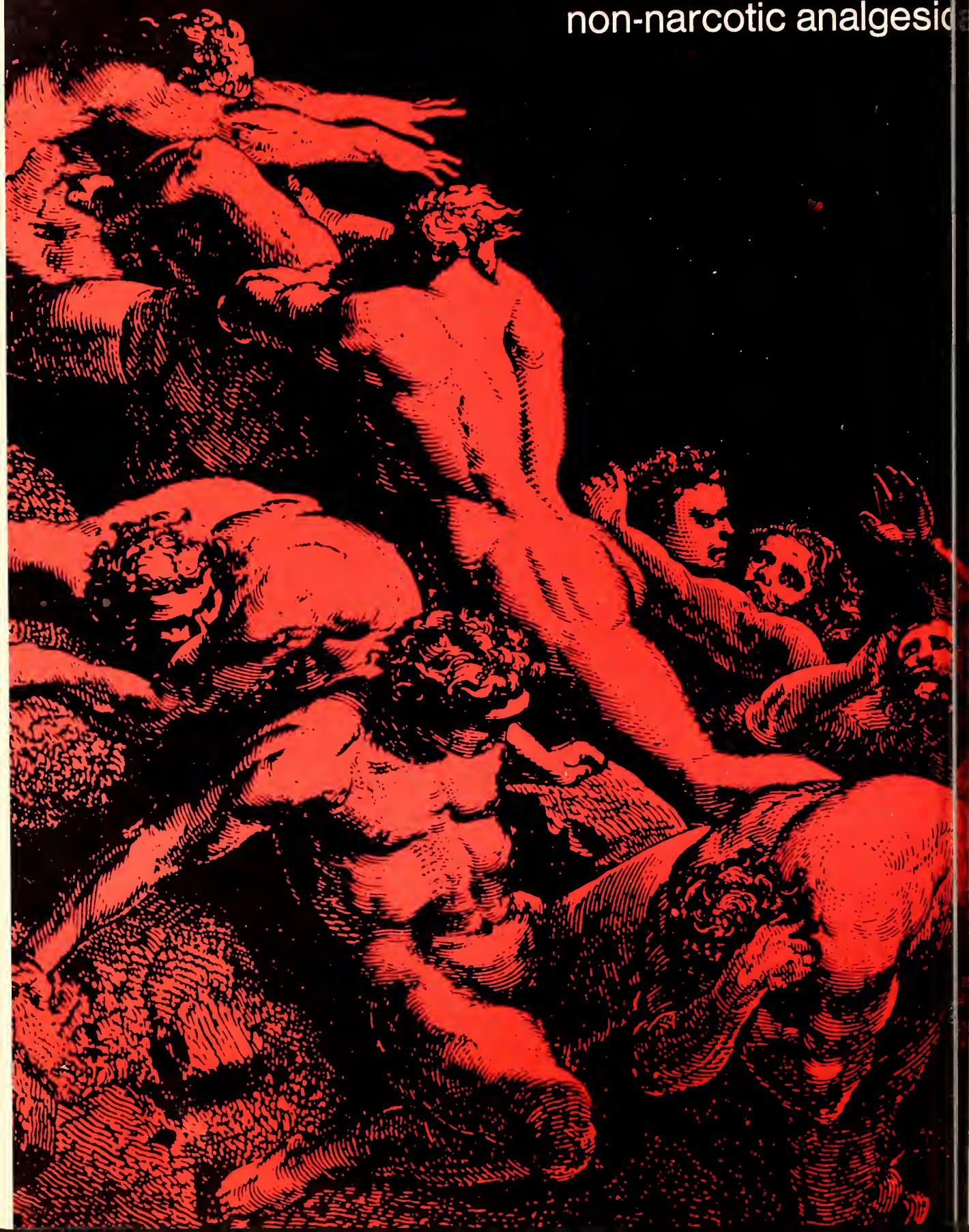
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THE PROBLEM OF PNEUMONIA IN AMBULATORY AND HOSPITALIZED PATIENTS

LOUIS P. JERVEY, M.D.

Pneumococci are still responsible for the large majority of bacterial pneumonias encountered in practice. In the individual patient who is otherwise healthy, response to treatment is usually prompt and recovery is the rule. Nationally, however, pneumonia still accounts for a significant annual mortality. These deaths usually occur in the elderly, the very young or the disabled. The frequency of this infection in our aging population has led some to suggest the reevaluation of immunization with pneumococcal polysaccharide in selected groups.¹

Many other microorganisms infect the lung including bacteria, fungi, rickettsiae, viruses, protozoa and others. In evaluating the prevalence of various pulmonary infections it is helpful to divide the patient population epidemiologically into two major groups:

1. Hospitalized and otherwise sick patients,
2. Non-hospitalized and otherwise well patients.

There is good reason to divide the pa-

tient population at this point since the spectrum of infections affecting the two groups differs significantly. In many ways the ambulatory patient with chronic disease and lowered host resistance is similar to the patient who acquires his infection in the hospital. If one considers the differing likelihood of developing infection due to unusual microorganisms in each of these situations, fewer diagnoses will be missed.

Non-Hospitalized and Otherwise Well Patients:

This category is best represented by the ambulatory patient who arrives at the physician's office with lower respiratory infection and bronchopneumonia, the latter diagnosis being made by physical examination, fluoroscopy or possibly by x-ray. Such patients are usually not critically ill and the question often arises as to whether to use antimicrobial therapy or only symptomatic treatment.

Many of the pulmonary infections of this type are viral in etiology. It is helpful to remember that viruses may produce a number of respiratory syndromes: undifferentiated upper respiratory infection, pharyngitis, bronchitis and pneu-

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monia. To make matters more confusing, there is considerable overlap so that the same virus may produce two or more syndromes in a single patient, or a different syndrome in another patient. Often infection with a single virus produces a spectrum of disease in members of the same household, one individual manifesting upper respiratory infection, another bronchitis and a third bronchopneumonia. A number of viruses can cause pneumonia but the more frequently encountered agents include adenoviruses (which cause about 3% of non-bacterial pneumonias in the civilian population but up to 50% in military outbreaks), influenza viruses (10 to 14% of non-bacterial pneumonias in non-epidemic years but more in epidemic years), para-influenza viruses (about 4%) and respiratory syncytial viruses (up to 17%).²

It is often difficult to distinguish by physical examination between bronchitis and bronchopneumonia produced by viral agents. A small area of pneumonia may be diagnosed accidentally from a chest x-ray film, resulting in surprise to the patient and the physician. On many occasions the patient is recovering by the time the disease is discovered. These viruses are not susceptible to available antibiotics and treatment should be symptomatic unless secondary bacterial infection occurs.

No longer considered to be a virus is the Eaton agent (*Mycoplasma pneumoniae*). The presence of DNA, RNA and a cell membrane distinguishes this microorganism from the true viruses. It has now been implicated as the cause of a number of cases of "primary atypical pneumonia," formerly thought to be viral in origin. *M. pneumoniae*, like the viruses, can also cause a wide spectrum of disease including upper respiratory infection, otitis, bronchitis and pneumonia. Household outbreaks are not uncommon and family members may exhibit different

syndromes.³ The bronchopneumonia produced by this microorganism often cannot be distinguished from that produced by the above mentioned viruses except by relatively sophisticated laboratory tests. Diagnosis of this infection, however, assumes more importance since mycoplasmas have been shown to be susceptible in vitro and in vivo to tetracycline and erythromycin.⁴

Office patients with bronchopneumonia often have pneumococcal infections. Since superinfection with the pneumococcus frequently occurs as a complication of a viral respiratory infection, differential diagnosis becomes even more difficult. Symptoms of pneumococcal infection in this setting may be considerably milder than those customarily associated with acute lobar pneumonia. From a practical point of view there is often no way to distinguish pneumococcal infections from viral and mycoplasma infections in the office patient.

Fortunately, severe bacterial infections due to staphylococci, klebsiellae and other Gram negative rods are uncommon in this group of patients and do not ordinarily enter into the differential diagnosis.

Diagnosis:

Diagnosis in the viral infections may be made retrospectively by culture and serologic tests. Worthy of mention is a special solid medium for the culture of *Mycoplasma pneumoniae*. In office patients, however, these tests will not often be practical. Mycoplasma infections produce a non-specific rise in cold agglutinins in about 40 per cent of patients. Adenoviruses can also produce elevated cold agglutinins and thus this test, although helpful, is not specific. The white blood cell count is a more practical office measure which can be easily performed. Elevated leukocyte counts suggest bacterial infection but mycoplasma infections can also be associated with significant elevations.

Treatment:

Since specific office diagnosis in this group of patients is often impossible, the physician is usually confronted with two major decisions: to hospitalize or not to hospitalize and to treat or not to treat. Both of these decisions must be made upon the basis of how sick the patient appears to be as well as upon a number of unrelated factors such as the availability of hospital beds, the availability of hospital insurance, etc.

The mere presence of roentgen evidence of pneumonia does not necessitate antibiotic treatment. If the patient is already improving he may require only symptomatic treatment. If, however, treatment is judged necessary and hospitalization does not seem to be required, the drugs of choice in order of preference would be: (1) erythromycin 250 mg four times daily or (2) tetracycline 500 mg four times daily. Either of these programs would ordinarily prove to be effective treatment for pneumococcal or mycoplasma infections, recognizing the fact that either would constitute over-treatment for viral infection. Erythromycin is considered the first choice since increasing numbers of pneumococci are being reported resistant to tetracycline.⁵⁻⁷ Penicillin, while still the drug of choice for pneumococcal infection, would be ineffective against *Mycoplasma pneumoniae*, and since this distinction cannot be conveniently made in the office, would not be the preferred treatment.

Hospitalized and Otherwise Sick Patients:

In this group one deals with a *different patient population* at interplay with a *different microbial population*. Lengthening of the life span and the provision of adequate hospitalization insurance has led to an increasing mean age of the hospitalized patient. As a result, such patients often suffer from chronic diseases including atherosclerosis, carcinoma, lymphoma, collagen vascular disease, etc. The hospital

population usually includes diabetics and post-operative patients who in some instances have had cardiac and pulmonary surgery, and nowadays, organ transplantation.

Hospitalized patients frequently receive antibiotics as well as cytotoxic and immunosuppressive drugs. The use of steroids is more prominent in this group. All of these factors are associated with lowering of host resistance to usual and unusual infections.

Such patients also are provided new portals of entry for micro-organisms through tracheostomies, indwelling venous catheters, indwelling urethral catheters, etc. Oxygen therapy equipment is in common use. Infection with opportunistic microorganisms has been related to each of these situations.⁸⁻¹¹

The hospitalized patient is exposed to a population of penicillinase-producing ("resistant") staphylococci as has been amply described in the literature for the past ten years. Resistant Gram negative rods, however, seem to be replacing resistant staphylococci as the major offenders in hospital-acquired infections at the present time.¹²

The patient admitted to the hospital with pneumonia is obviously more akin to the office patient than the patient who acquires his infection in the hospital. In the former, pneumococcal infections are more frequently encountered. If the patient is sick enough to require hospitalization, bacteriologic diagnosis should be pursued much more vigorously than in the office situation.

In infections acquired by the hospitalized patient pneumococci are still common pathogens but one must be alert to the possibility of infection caused by less common and more resistant microorganisms. The pneumococcus is so susceptible to the action of antibiotics such as penicillin and erythromycin that it is usually eliminated by these drugs. Pneumonia which de-

velops in patients already being treated with these agents is practically never pneumococcal in etiology. Staphylococcal infections are extremely common in patients in all of the situations suggested above. The staphylococci are almost always penicillin-resistant. Leukemia and lymphoma patients are unusually prone to develop cryptococcal infections. Furthermore, patients treated with steroids, immunosuppressive drugs and cytotoxic agents fall victim to a number of rare opportunistic infections including those due to candida and aspergillus species, *Listeria monocytogenes*, *Pneumocystis carinii* and the virus of cytomegalic inclusion disease.

Diagnosis:

In the hospitalized patient and particularly in the patient who acquires pulmonary infection in the hospital, the diagnostic approach must be vigorous. Gram stain of the sputum is a must for an early guide to therapy. Cultures of blood and sputum should be obtained. In many hospitals it is possible to obtain material for viral cultures and antibody determinations, although these tests are not yet at a level where they provide a practical guide to treatment. The determination of cold agglutinins may suggest the diagnosis of mycoplasma infection. Special examinations of sputum for fungi, silver stains for pneumocystis and cell block cytology for cytomegalic inclusion disease may be indicated. In some pulmonary infections, lung biopsy may be necessary for diagnosis.

Treatment:

Pneumococcal pneumonia: Penicillin is still the treatment of choice. Massive doses offer no advantage and possibly increase the risk of superinfection. Treatment with 500,000 units of aqueous potassium penicillin G intramuscularly every 8 hours is more than adequate. If the patient is allergic to penicillin, erythromycin is an effective substitute. At times cephalothin

may be used cautiously recognizing the risk of crossed hypersensitivity in individuals allergic to penicillin. Pneumococci have not yet shown resistance to any of these agents.

Staphylococcal pneumonia: One of the penicillins is the treatment of choice. If the staphylococcus is known to be susceptible to penicillin G, then this drug should be used in larger doses than those utilized in pneumococcal infections. If in vitro sensitivity is not known or if the microorganism is resistant to penicillin G, a penicillinase-resistant penicillin such as oxacillin or nafcillin should be used. Cephalothin again represents an effective substitute since this drug is resistant to destruction by penicillinase. In individuals in whom none of these agents can be used, kanamycin or vancomycin may be considered.

Klebsiella-aerobacter pneumonia: There is still no definitive treatment for Klebsiella (Friedlander's) pneumonia. Strains vary greatly in their in vitro susceptibility to antibiotics. In serious infection mortality tends to be high. Therefore a combination of antibiotics is preferred and treatment could be instituted with cephalothin combined with tetracycline or streptomycin until a more accurate selection is possible as a result of in vitro sensitivity tests. A word of caution is advisable at this point since Klebsiella strains often occur as part of the normal upper respiratory flora and are often recovered from sputum cultures in individuals already under treatment with antibiotics. The mere presence of this microorganism under these circumstances does not connote infection or superinfection and does not dictate the use of such vigorous therapeutic measures.

Pseudomonas pneumonia: For serious pulmonary infections due to pseudomonas, colistin in a dose of 5 mg/kg intramuscularly is the treatment of choice. Parenteral gentimicin may become useful when it is released for general use. A newer

penicillin, carbenicillin, has demonstrated anti-pseudomonas activity and is currently under study.

Proteus pneumoniae: For pulmonary proteus infections, kanamycin is probably the treatment of choice. Cephalothin or ampicillin may at times be used in combination with kanamycin. In vitro sensitivities are a must to guide antibiotic selection.

Pneumocystis carinii pneumonia: A few

cases have now been successfully treated with pentamidine isethionate.^{13,14}

Listeria monocytogenes pneumonia: Sensitivity of this Gram positive rod to antibiotics varies considerably. Therapeutic success has occurred most regularly with the use of parenteral tetracycline.¹⁵

Cytomegalic Inclusion Disease: Successes have been reported with a relatively new agent, floxuridine, (2'-deoxy-5-fluorouridine or FUDR).¹⁶

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SONIC BLOOD FLOW DETECTOR:

ITS USE IN THE DIAGNOSIS OF PERIPHERAL VASCULAR DISORDERS

JOHN E. PARKER, M.D.*

GILBERT B. BRADHAM, M.D.**

In January of 1967, the Medical College Hospital established the Peripheral Vascular Rehabilitation Facility for the diagnosis and evaluation of peripheral vascular disorders. Since that time, approximately 300 patients have been evaluated by techniques previously described.¹ Late in 1967, an instrument was acquired by the facility to be evaluated for its usefulness in aiding the clinician to ascertain the site of obstruction of peripheral blood vessels. The instrument is formally termed the Transcutaneous Doppler Blood Flow Detector, but has been called "The Doptone" for reasons of brevity. The Doptone (Fig. 1) is an easily portable (9.5 lbs.) electronic instrument. It is capable of being powered by a small, self-contained, rechargeable battery or directly connected to conventional line voltages.

The operating principle of the instrument is based upon the well known Doppler effect, which was first described by the Austrian physicist, Christian Johann Doppler. The most familiar example of the Doppler effect occurs to the motorist who is meeting an automobile with its horn blowing. As the oncoming automobile approaches, the sounds increase in



1. The Doptone is shown as it is used. The probe contains the ultrasound emitting device and the sensing elements. The sounds produced are heard from the loudspeaker.

intensity. As the automobile is passed, the pitch of the sounds decreases abruptly, these effects being the relationship of the speeds of sound and automobiles and the dependence of pitch on these velocities.^{2,3}

The Doptone is composed of two major components as illustrated in Figure 1. The smaller cylindrical tube contains electronic circuitry including a transmitting and receiving crystal. The larger section is the battery pack unit, which houses the loud speaker for amplifying the sounds relayed from the receiving crystal. The Doptone is used by placing the probe against the skin directly over the vessel to be examined. The transmitting crystal in the head of the probe sends a continuous stream of ultrasonic sound waves

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through the tissues directly beneath the probe at a set frequency of 5 megacycles per second. On striking an object, the ultrasonic beams are reflected back toward the probe and are picked up by the receiving crystal in the head of the probe. If the transmitted beam strikes a stationary object, it is relayed back toward the receiving crystal at the same frequency at which it was transmitted, i.e., 5 megacycles per second. The filtering mechanism of the receiving crystal will eliminate any signal traveling at a rate of 5 megacycles per second. Subsequently, there will be no conversion of these signals into audible sounds. Sound reflected back from a moving target such as a red blood cell will be given a frequency greater than 5 megacycles per second and the change in frequency will be detected by the receiving crystal. It will then be converted into an audible signal and relayed through the loud speaker to the clinician. This change in frequency is proportional to the velocity of the blood flow. Consequently, the greater the velocity of the moving red cell, the greater will be the pitch of the sound produced through the loud speaker.

The Doptone can be used to evaluate the following vascular conditions.

Arterial Obstruction. The site of arterial obstruction can be determined with the Doptone by moving the probe along the anatomical course of the artery until the sounds initiated by the instrument cease. This point, then, is the point at which blood is no longer flowing. It has been found that in the presence of atherosclerotic lesions, a hammering effect is frequently heard immediately proximal to the obstruction. This is felt to be the point at which the velocity of blood is abruptly changed at the site of the last collateral vessels.

Arterial Stenosis. In atherosclerotic lesions in the carotid arteries or those of the femoral vessels, a portion of the vessel is rendered stenotic and the patient's

symptoms are related not to a total cessation of blood flow, but to a marked diminution due to the stenotic lesion. When one traces these vessels with the Doptone, an abrupt change in the frequency of the sound implies the probe has been moved from a prestenotic area to the stenotic segment. This change to a higher frequency is due to the increased velocity of the blood through the stenotic segment.

Patency of Grafts. It is frequently difficult for the clinician to determine the postoperative patency of grafts used for reconstructive arterial surgery. Palpable pulses may in such cases be masked by edema, bandages or vasospasm. In such cases, the Doptone is easily used to gain an objective evaluation of the patency of the graft and can be used at any stage of the postoperative course of the patient at the patient's bedside.

Venous Thrombosis. Perhaps the most advantageous use of the Doptone is encountered in the patient in whom venous thrombosis is suspected. In many such cases, it is difficult to assess clinically whether the condition is that of phlebitis with deep-vein thrombosis or whether the deep veins have remained patent. In such patients, the performance of a venogram may not be feasible. The Doptone is of remarkable advantage in such situations. The normal venous sounds produced by the Doptone produce an irregular, low-pitched sound which is very analogous to the sound of wind blowing through trees. These sounds are, of course, phasic with respiration. Since the venous sounds are characteristic and easily differentiated from arterial sounds, the Doptone can be used accurately to detect venous thrombi. Additionally, in cases of venous thrombosis where surgical thrombectomy is used, the continuous evaluation of the patency of the vein in the postoperative period can be ascertained.

Clinical Usefulness

The instrument has been evaluated in many of the conditions listed above in

well over 50 patients in the Medical College Hospital and in the Spartanburg General Hospital. The instrument has been found to be compact, easily portable to the bedside, and its application to the patient involves no more difficulty than is rendered with the conventional stethoscope. There is no sensation discernible by the patient other than the probe being applied to the skin in much the same manner as the stethoscope is used. No more or less training is necessary for use of the Doptone by any clinician than is required in using the stethoscope.^{4,5} In the 50 patients studied with the instrument,

no false positive results have been found, and the instrument has been of significant advantage in many of these patients as an ancillary means of rapidly and accurately establishing a significant portion of their diagnoses.

Summary

The Doptone is a light weight portable instrument designed to ascertain the presence or absence of flow within blood vessels. It has been evaluated extensively in patients and has been found to be of practical clinical advantage in the evaluation of various abnormal vascular conditions.

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TWO NEW TOPICAL NITROFURANS. FURAZOLIUM AND FURAZOLIDONE

A THERAPEUTIC TRIAL AMONG PATIENTS WITH SKIN SORES*

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Cutaneous streptococcal and staphylococcal infections are common among children of the southeastern United States.¹ Occasionally, these infections may be followed by acute glomerulonephritis.¹

This clinical trial compared the therapeutic efficacy of two new topical nitrofurans (furazolium .116% in a polyethylene glycol base or a furazolium powder aerosol) with hexachlorophene soap. Previously unpublished clinical trials have shown that hexachlorophene soap decreased the proportion of skin sores colonized by group A beta hemolytic streptococci.² During the trial here reported, children were continually naturally exposed to mosquito bites which were the most common initial cutaneous insults reported in the genesis of skin sores.³

*This study was supported by a grant from the Eaton Division of Norwich Pharmacal Company.

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Material and Methods

Volunteer population: Volunteers were recruited through the information and referral centers of the OEO on the Charleston peninsula. Boy Scouts of the area visited potential volunteers in their homes and acquainted them with the itinerary of the study team composed of physicians and medical students. All visits were made near the patient's home, minimizing both follow-up difficulties and temporal variables. All observations were recorded on standard study forms.

Medications and dosage: Furazolium in polyethylene glycol and furazolidone aerosol were furnished by the Eaton Laboratories, Norwich, New York. Hexachlorophene soap and regular bath soap were purchased locally. Volunteers were all instructed to bathe once daily either with hexachlorophene soap or bath soap. Volunteers in the hexachlorophene group were asked to wash sore areas another two times daily. Volunteers in the nitrofurans groups were instructed to apply those medications twice daily. No dressings were used.

Laboratory methods: Skin lesions were swabbed under the crust; inoculated onto sheep blood, staphylococcal 110 and KF agar plates; and then incubated at 35°C. Staphylococcal isolates were assayed for coagulase production and subjected to antibiotic disc sensitivity testing. Streptococcal isolates were identified as group A by bacitracin sensitivity and immuno-fluorescence.⁴

Table I
A Demographic Comparison of Study Groups

Demographic Variable	Hexachlorophene Soap	Furazolium	Furazolidone	Statistical Comparison
Median Age (yrs)	7	7	7	NSD
Race	All Negro	All Negro	All Negro	None
Sex: Male	55%	54%	57%	NSD
Female	45%	46%	43%	

Table 2
Comparison of Pre-Trial Skin Sore
Characteristics Among Study Groups

Skin Sore Characteristic	Hexachlorophene soap	Furazolum	Furazolidone	Statistical Comparison
Median Number	4	3	2	NSD
Median area of largest sore (cm ²)	.33	.54	.60	NSD
Median duration prior to therapy (weeks)	4	2	2	NSD
Location of sores				
Head	14.5%	17.4%	7.8%)
Trunk	1.6%	5.8%	1.3%) NSD
Arm	12.9%	26.7%	11.7%)
Leg	33.7%	33.4%	30.5%)
Largest sore surface				
Exudative	11%	9%	27%	.01>p>.00
Crusted	39%	91%	73%	

Results and Discussions

Comparison of study groups: Serious doubts of the validity of any clinical trial arise if trial, i.e. study, groups differ significantly from each other with respect to important clinical or demographic variables. A demographic comparison of study groups in this trial is summarized in Table 1 where groups are shown to be homogenous with reference to age, race and sex.

Clinical characteristics of the skin sores in each study group were then examined, as shown in Table 2. Study groups did not differ significantly in median number of sores, median area of largest sore, median duration of sores or body location of sores. Sore surface character did

significantly differ with fewer crusted sores found in the furazolidone group.

Bacteriologic characteristics of skin sores among the study groups were then compared, as seen in Table 3. Study groups did not differ significantly in the presence of gram positive cocci or staphylococci. However, streptococci and other bacteria such as diphtheroids were significantly less prevalent in the furazolidone group. Since group A beta hemolytic streptococcal infection is often associated with a hard crusted lesion, the observed decrease in these organisms might well accompany the significant decrease in crusted sores observed in the furazolidone group.

Antibiotic sensitivity patterns: The an-

Table 3
Comparison of Bacteriologic Characteristics
of Skin Sores Among Study Groups

Bacteriologic Characteristic	Hexachlorophene soap (%) N = 62	Furazolum (%) N = 86	Furazolidone (%) N = 77	Statistical Comparison
Gram Positive Cocci	92	94	94	NSD
Staphylococci	30	30	91	
a. Coagulase positive	50	59	71	NSD
b. Coagulase negative	30	21	20	
Streptococci	32	36	52	
a. Group A	75	78	40	p<.001
b. Non-Group A	7	3	12	
Other bacteria	93	33	77	.02>p>.05

tibiotic sensitivity patterns of coagulase positive staphylococcal isolates are tabulated in Table 4. As expected, a significant portion (12.4%) of wild staphylococci were penicillin resistant. None of the 75 isolates tested was resistant to furazolidone and only one of 55 tested was resistant to furazolidone. Sensitivity patterns were homogeneous over the three study groups.

Table 4
Antibiotic Sensitivity Patterns of Coagulase Staphylococcal Isolates

Antibiotic	Number Tested	Percent Resistant
Penicillin	136	12.4
Oxacillin	136	2.4
Keflin	136	0.0
Lincomycin	136	3.8
Bacitracin	136	10.6
Furazolum	75	0.0
Furazolidone	55	1.8

Response to therapy: Volunteers were visited one week after therapy had been instituted. If the volunteer was completely healed, he was excused from further follow-up. Volunteers who appeared "worse" on first follow-up were re-evaluated. All volunteers who were not healed at first follow-up were seen again one week later. Adequate follow-up was achieved on 94.3% of the study population and study groups did not differ significantly in the proportion of volunteers lost to follow-up.

Clinically, therapeutic effects were partitioned into one of four categories: first, a "well" category, indicating that all sores were healed, second, an "improved" category indicating that the area of the largest sore was diminished and the number of sores decreased, third, an "unchanged or indeterminate" category denoting that either the number of sores and the area of the largest sore was unchanged or that area was decreased while the number was increased or vice versa. Fourth, a "worse" category indicating that both the area of the largest sore and

that the number of sores had increased, or that one had increased while the other remained unchanged.

Clinical results observed at first follow-up are summarized in Table 5 when it was noted that furazolum and furazolidone were superior to soap but not significantly different from each other. At that time 60.3% of the hexachlorophene soap group were improved or well as contrasted with 85% of the furazolum and 91.4% of the furazolidone groups. The two-week follow-up experience shown in Table 6 was similar in that topical nitrofurans were significantly superior to soap. At that time 73.7% of the soap group were improved or well as contrasted with 97.6% of the furazolum and 95.7% of the furazolidone group.

Table 5
Clinical Findings One Week After Beginning of Therapy: Distribution by Study Group

Clinical Category	Hexachlorophene soap (n = 62)	Furazolum (n = 86)	Furazolidone (n = 77)
Healed	20	35	34
Improved	15	33	30
Indeterminate or	13	7	5
Unchanged			
Worse	10	5	1
Absent	4	6	7

Chi Square

Comparison: Both furazolum ($.02 > p > .01$) and furazolidone ($p < .001$) are better than soap. However, furazolum and furazolidone results do not significantly differ from each other ($.5 > p > .3$)

Other observations reinforce the evidence for therapeutic efficacy. First, only one patient in the nitrofur group was switched to another medication. This child had developed a subcutaneous abscess that was not amenable to topical therapy. Second, the 13 patients who were switched from soap to furazolum at the first follow-up were categorized as follows after one week on furazolum: 5 well, 6 better, and 2 unchanged. Third, the 17 individuals who failed to comply with

therapeutic instructions during the trial were homogeneously distributed over the three study groups and accounted for six of those not well in the furazolum group and seven of those not well in the furazolidone group.

Table 6
Clinical Findings Two Weeks After
Beginning of Therapy: Distribution by Study Group

Clinical Category	Hexachlorophene soap	Furazolum	Furazolidone
Well	37	72	62
Improved	5	9	5
Indeterminate or	9*	2	3
Unchanged			
Worse	6*	0	0
Absent	5	3	7

Chi Square Comparison: Both furazolum ($p < .001$) and furazolidone ($.01 > p > .001$) are better than soap. However, furazolum and furazolidone results do not significantly differ from each other ($.5 > p > .7$)

*13 of these volunteers including seven in the "indeterminate" category and six in the "worse" category were switched to furazolum at the first follow-up and are thus "frozen" in the clinical category of the first follow-up visit. Eleven of the thirteen were healed or improved after one week of furazolum therapy.

Volunteer acceptance: Almost 94% of the volunteers using furazolum applied the preparation as directed. In no case did volunteers voice complaints about this preparation. Similarly, 91% of the furazolidone volunteers utilized their medication. The observers gained the impression that there was a tendency to apply the aerosol powder too thickly and that volunteers preferred the more familiar ointment preparation.

Drug reactions: In no case was local hypersensitivity or systemic toxicity noted. No volunteer was reported to have abnormally colored urine and no cases of vesicular rash with onset after therapy were observed.

Summary

Topical furazolum .116% in polyethylene glycol base and furazolidone aerosol powder appeared to be therapeutically effective in skin infections caused by gram positive cocci. Both preparations were well accepted and tolerated without evidence of sensitization or toxicity.

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THE MANAGEMENT OF MASSIVE PULMONARY EMBOLISM FOLLOWING HYSTEROSALPINGOGRAPHY

JOSEPH HODGE, M.D.*

ALISON H. PRICE, M.D.**

Since 1912, following the advent of hysterosalpingography as an important diagnostic procedure in gynecology, a significant number of reports dealing with oil embolism have appeared in the literature.^{2-5,7,9,12,14,17} The most serious complications resulting from this procedure are pulmonary and cerebral embolism, infarction, and acute iodism. Also of importance are pelvic peritonitis, septicemia, acute salpingitis, tubal rupture, abortion and reactivation of tuberculosis. Morbidity varies from less than one-half to almost six per cent, and the mortality rate is less than one in 200 procedures. Mechanical trauma to the endometrium by the cannula incident to recent menstruation or intrauterine trauma as a result of previous surgical procedures has been responsible for the intravasation of iodized contrast media. Excessive pressure gradients or injection of quantities of contrast media can rupture the endometrium and force the iodized oil into the systemic circulation. Complications have been reported with Skiodan Acacia^{14,15}, Lipoidal^{3,4,9-12,16} Urokon², Medopaque^{3,13}, Visorayopaque^{7,8}, Sinografin¹ and other contrast media^{5,6,17}. An attempt is made to evaluate this not too infrequent complication and our treatment is discussed. The authors have found in the medical literature only fragmen-

tary information regarding treatment of embolism with iodized oil.

CASE: A 35 year old woman with massive pulmonary embolism incident to hysterosalpingography with Iodochloral, a non-water soluble iodized contrast medium, was admitted to the Jefferson Medical College Hospital on December 2, 1956, for evaluation of uterine fibromyomata and anemia. During the year prior to admission the patient complained of menorrhagia and studies confirmed an iron deficiency anemia. She was treated with ferrous sulfate and vitamins. Eight weeks prior to admission, the annual examination by a gynecologist revealed two uterine fibromyomata of moderate size. The last two previous menstrual periods occurred November 22, 1956, and October 22, 1956. On admission to the hospital the temperature was 37°C, pulse 78, respirations 18 per minute; the blood pressure was 108/60 mm Hg. Physical examination was normal except for two abdominal pelvic masses, one in the lower left quadrant and one in the hypogastric area, each about the size of an orange. Pelvic examination revealed an intact vaginal hymen. The value for the hemoglobin was 11.76 Gm/100 ml, hematocrit 35 per cent; leukocytes numbered 4,000 and the differential count was normal. Urinalysis was normal.

On December 4, 1956, following a hymenectomy, a hysterosalpingogram was done. A large uterine cavity was found and the gynecologist introduced 30 ml of Iodochloral under normal pressure, using the fractional technique. The procedure was apparently well tolerated by the patient. Four hours later she developed intermittent paroxysmal coughing which was more severe on motion, especially if turned from side to side. Also there was nausea and vomiting, which occurred three or four times. Examination of the chest was negative except for the presence of rhonchi over both basal lung fields. She was encouraged to cough and to dorsiflex the feet.

A roentgenogram of the chest 24 hours later demonstrated diffuse fine reticulated opacities over both lung fields, consistent with the presence of

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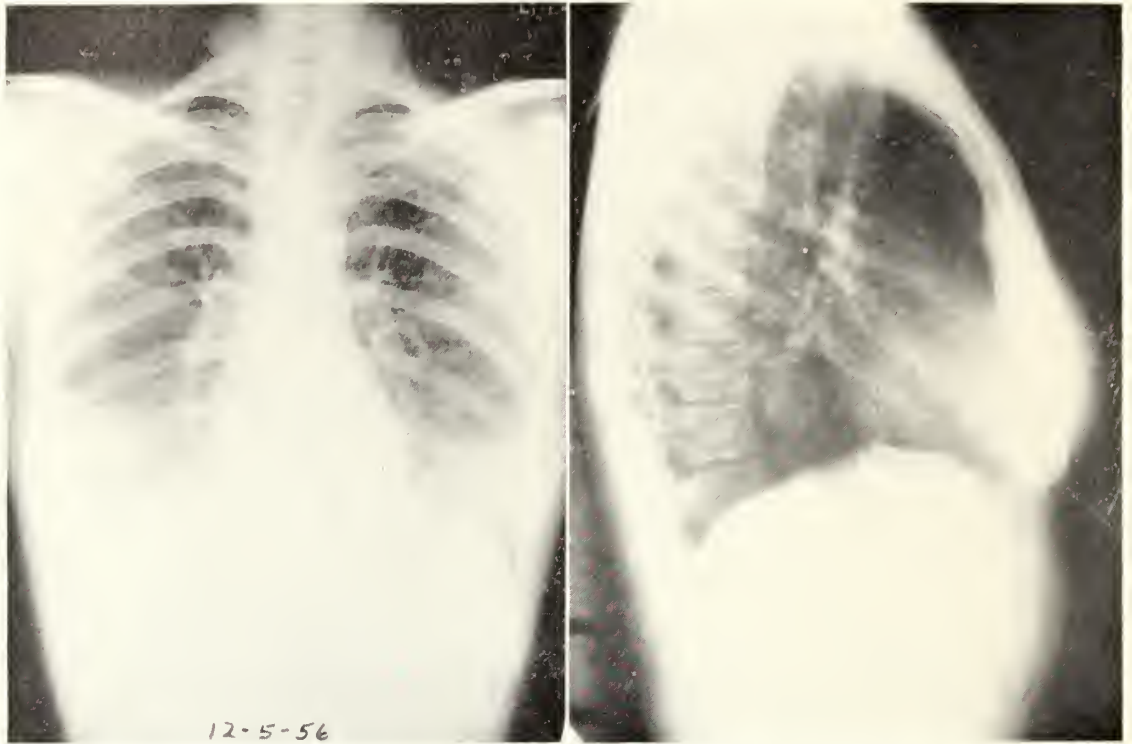


Fig. 1 (A) PA of the chest. (B) Lateral of the chest—12/5/56. Projections demonstrate the presence of diffuse reticulated opacities in both lung fields consistent with the presence of interstitial embolization throughout both lung fields.

radiopaque medium, Iodochloral, as interstitial emboli (Fig. 1). There were calcified areas in the right hilum and in the left sixth interspace from some previous infection or irritation. The hysterosalpingogram demonstrated a large endometrial cavity with flattening of its left border due to a large intramural fibroid. There was a left hydrosal-

pinx with intravasation of radiopaque dye into the uterine sinuses, parametrial and vertebral veins (Fig. 2).

Roentgenograms of the skull revealed no evidence of pooled radiopaque material. The patient was kept at absolute bed rest. The electrocardiogram showed general low voltage of T waves in

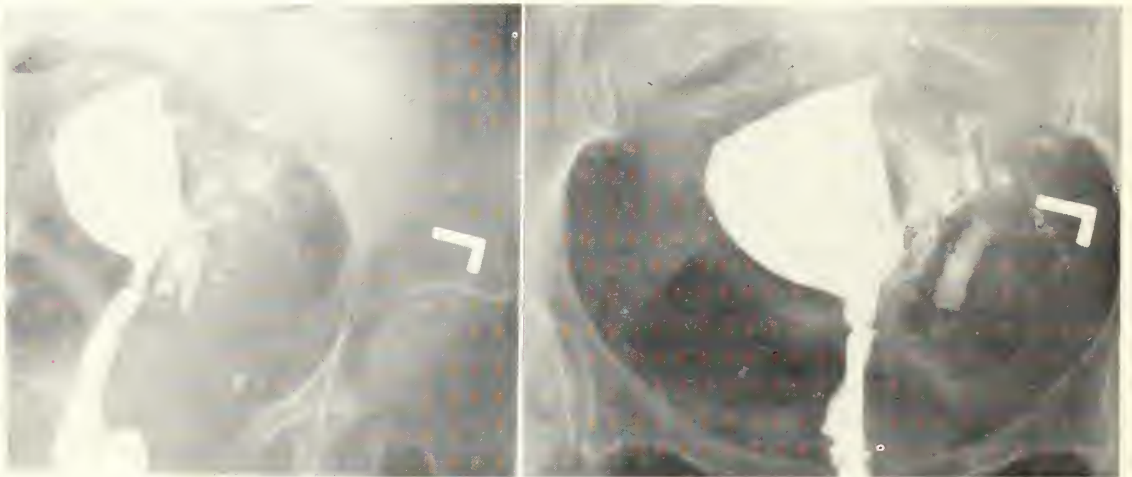


Fig. 2. Hysterosalpingograms demonstrating a large endometrial cavity with flattening of its left borders, and a left hydrosalpinx with intravasation of radiopaque media into the uterine sinuses, parametrial and vertebral veins.

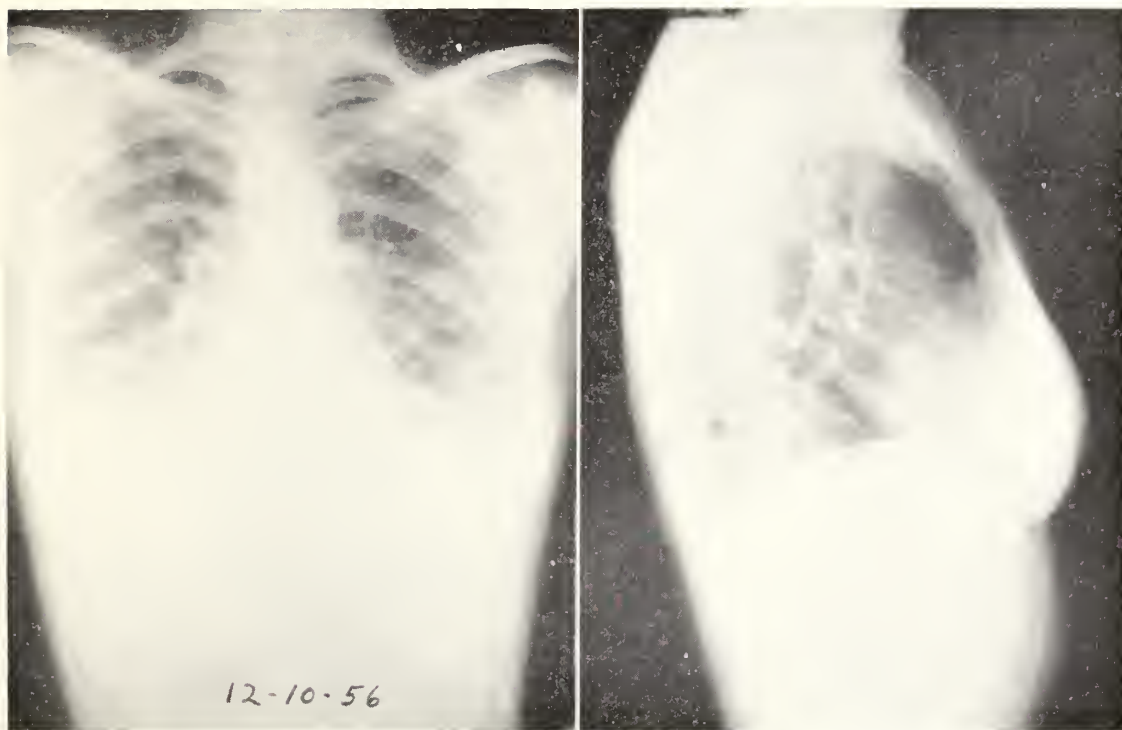


Fig. 3 (A) PA, (B) Lateral of the chest—12/10/56. Six days after massive embolization there is a decrease in the number of small opaque bodies with parenchymal changes in the lower 2/3 of both lung fields appear to involve the lymphatics.

limb and chest leads with swooping of RST segment in V2 through V6. The patient was treated for acute iodism and pulmonary irritation due to oil embolization. She was kept at absolute bed rest, covered with blankets to induce sweating, and received intravenously 2500 ml of 5 per cent sodium chloride solution in 48 hours in addition to oral fluids. Codeine sulfate was given every four hours in an attempt to control the cough, and physiological saline solution eye wash was utilized for the coryza. Intake and output were measured and recorded; urine determinations for the presence of fat and hematological studies were done daily. For five or six days following hysterosalpingography, the patient had a febrile course with temperature reaching 39.5°C , pulse 110-120 and respirations 26-30 per minute. There were intermittent episodes of paroxysmal coughing, nausea, nose bleeds and metrorrhagia. Leukocyte count ranged from 4,000 to 7,000. Initial blood platelet count was 108,000 per cu mm and increased to 170,000 per cu mm after therapy. All electrocyte studies, bleeding and coagulation times were normal. The daily urinary output exceeded 1000 ml. Urine studies revealed no evidence of lipid material. On December 9, 1956, five days after massive embolization, the temperature, pulse and respirations returned to normal limits; evidence of acute toxicity had subsided. The patient received

additional 5 per cent sodium chloride solution and the nausea gradually subsided.

Meticorten in doses of 2.5 mg was given orally twice daily to help restrict inflammatory reaction and to prevent possible secondary pulmonary fibrosis. Chest roentgenograms repeated on December 10, and December 12 revealed some clearing of the lung fields, (Fig. 3, Fig. 4) although coarse, irregular patches remained in the parenchyma of the middle and basal lung segments bilaterally, along with prominent lymphatic channels. Repeated roentgenograms of the skull were negative for evidence of opaque material. The patient was discharged from the hospital on December 14, 1956, complaining of weakness, easy fatigability, and weight loss of six pounds. Chest roentgenograms one month later showed the lungs to be clear, and pulmonary function was normal. She was examined nine years later and had abdominal hysterectomy performed for large uterine fibromyomata. Roentgenograms of the chest were normal, and there was no laboratory or clinical evidence of chronic pulmonary damage as a result of her experience.

Discussion: This patient represents massive embolization of the lungs with Iodochloral, an iodized radiopaque medium containing 27 per cent iodine, 7.5 per cent inorganic chloride in combina-



Fig. 4. PA of the chest 12/14/56 reveals further reduction in the number of small emboli and improvement of the changes in the middle and lower thirds of the lungs.

tion with a highly refined peanut oil. Attempts to dissolve this agent in water and other solvents in the laboratory were unsuccessful. Hymenectomy for introduction of the cannula was done and fractional doses of the total 30 ml were injected into the uterine cavity under fluoroscopy without excessive pressure. This amount was calculated to contain approximately 8 grams of iodine, of which it was postulated that 4 grams of the iodine in peanut oil entered the uterine circulation and reached the lungs. The mechanism of intravasation of iodized oil in this case may be on the basis that since menses had terminated 5 days previously the endometrium was deficient, or a large vein over the site of the uterine fibroids was entered when Iodochloral was introduced. Injury to the endometrium can be eliminated since the gynecologist performing the procedure was careful not to injure the endometrium

while inserting the cannula. The iodized oil entered the uterine sinusoids, coursed along the uterine veins, internal pudendal vein, internal iliac veins, to the vena cava and ultimately to the capillary side of the alveolus via the pulmonary artery. Under fluoroscopy, intravasation may be recognized by the appearance of shadows outside the uterine cavity (Fig. 2), or incomplete filling of the cavity. Treatment was directed first toward abating the acute phase of iodism and secondly, the prevention of pulmonary fibrosis. Iodine intoxication was treated with intravenous 5 per cent physiological saline solutions of which 1500 ml were given on the first day following the procedure, and a total of 2500 ml were administered in the first 48 hours of illness.

The iodine radicles were bound up by the sodium ions and eliminated by the kidney in the urine. It was the belief that serum lipases and pulmonary lipolytic activity separated the iodine from the peanut oil and the saponified fats would pass into the blood stream and lymphatics. The macrophages of the reticulo-endothelial system and vascular-endothelium would phagocytize oil emboli and thus convey these via the lymphatic channels and thoracic duct, with ultimate deposition in the reticulo-endothelial system and large intestines. Active phagocytosis was demonstrated by the presence of dilated lymphatics in the lung fields on chest roentgenograms and changes in the differential blood count from relative lymphocytosis to neutrophilia. There was no indication for administration of antibiotics and anticoagulants as advocated by some. It was felt that the administration of antibiotics would inhibit phagocytosis and slow up the elimination process of peanut oil from the interstitial tissue of the lung. Failure in this mechanism may result in decreased vital capacity and impaired pulmonary ventilation. In order to prevent pulmonary fibrosis from occurring as the result of peanut oil emboli,

Meticorten should be administered six days after the onset of embolization in doses of 2.5 mg for several days. Antibiotics should be given in cases of exudation, bronchopneumonia or severe infection. In this case there was a transitory thrombocytopenia, and to give anticoagulants would be deleterious to the hemopoietic system. Complications incident to hysterosalpingography with iodized oils are transitory with few residual sequelae. Mortality is less than one per cent. Experience by some indicate that water soluble contrast media offer better visualization, more rapid absorption and are less apt to produce the severe pulmonary changes incident to the use of agents that are insoluble in water.

Summary and Conclusions

1. Massive pulmonary embolism in a 35 year old woman following hysterosalpingography with Iodochloral (R) (iodized radiopaque media), has been presented.

2. A detailed report of the mechanism of intravasation, the specific management of the acute and chronic phase of oil embolism, and the pathologic-physiology upon which therapy was based has been discussed. In the acute phase, treatment was directed specifically toward the elimination of iodism by the use of hypertonic saline solutions. In the chronic phase, attempts were made to prevent pulmonary fibrosis and residual impairment of pulmonary function.

3. Massive embolism can be successfully treated. Anticoagulants and antibiotics are not generally indicated in this type of embolic phenomenon.

4. Being mindful of oil embolism, careful scrutiny under fluoroscopy for signs of intravasation and the performance of routine chest roentgenograms will decrease the incidence of morbidity and mortality incident to hysterosalpingography.

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X-RAY FILMS OF THE MONTH

C. J. GEILFUSS, M.D.

Medical University of South Carolina
Charleston, South Carolina



These films are from an aortic arch study. The patient is a 45 year old man who was experiencing numbness and weakness in the right arm. The right axillary, antecubital, and radial pulses were weak. Blood pressure in the right arm was 116/70mmHg, in the left arm 140/90. A bruit was heard over the right upper part of the chest. He was not diabetic.

The aortic arch study was done from a catheter introduced in the right femoral artery (percutaneous approach) and the tip positioned in the ascending aorta 2 cm above the aortic valve. On the left film above, made 2 sec. after injection, there is a significant stenosis at the origin of the right subclavian artery from the innominate artery (large lower arrow). The

stenotic diameter is less than 50% of the normal adjacent diameter. The patient's left vertebral artery is normal, but the right is not opacified. On the right film, made at 6 sec. after injection, the right vertebral artery (double black arrow), is opacified by downward retrograde flow of contrast material which has reached it by cross over from the opposite vertebral artery. The vascular surgeon performed a right subclavian endarterectomy, removing a large atherosclerotic plaque. A good result was obtained, and pulse and blood flow became normal.

This subclavian steal phenomenon can occur on either side. It can be produced by an occlusive or stenotic lesion of the innominate or subclavian artery. The lesion must be proximal to the origin of the

vertebral artery from the subclavian artery. It can be diagnosed with certainty only by arch catheter study, since retrograde brachial pressure injection can falsely cause the radiographic appearance of a steal.

Many patients with true subclavian steal will have clinical signs of ischemia in the brain area supplied by the basilar artery. This man did not.

To see branch arteries with distinct clarity, and not just the aorta itself, a

high pressure technique is needed. We have been using a Taveras injector at 1250 lb per square inch. If the procedure is carefully done, the complication rate is no higher than with lower pressures. Special catheters and connecting tubes are required to prevent tubing rupture. Multiple graded catheter sideholes prevent severe tip recoil. All aortic arch branches, including the carotid bifurcations (left picture, upper black arrows) can be seen from a single puncture.

50 YEARS AGO



September 1919

Papers on the treatment of epilepsy, of fractures, on sanitation and "Anaphylactic Manifestation of Foods in Children," the last by Dr. Lesesne Smith of Spartanburg, appeared in this issue. Horlick's Malted Milk occupied a prominent place in the advertising pages.

President's Page



With the papers daily carrying stories and magazines carrying features of the high cost of medical care and doctor's profiteering on Medicare and Medicaid, we would seem to be the public's whipping boy.

Now the Social Security Administration has gone even farther. It has cited Blue Cross of South Carolina, The Intermediary for Part A of Medicare for not enforcing the non-covered (custodial) care exclusion of Medicare hospitalization benefits. Failure to deny liability for these cases could mean retro-active denial of payment for these hospital stays with direct recourse to the hospital and in turn the patients for repayment.

Under the law, benefits can be paid for treatment in a hospital if medically necessary skilled nursing services are furnished on a continuing basis; that is, an overall level of care is furnished which must be done by or under the continuing supervision of trained medical personnel to assure the safety of the patient and achieve the medically desired result. A service would not be classified as a skilled service merely because it is performed by a trained medical or paramedical person. If the care can be safely and adequately self-administered or performed by the average nonmedical person without the direct supervision of trained medical personnel, or if the care consists only of assistance with the needs of daily activities, it is a level of care for which no benefit can be made.

Blue Cross requested the assistance of our association in developing guidelines for implementation of the exclusion in a way that will cushion the impact. On August 13, 1969 a special Ad Hoc Committee representing the South Carolina Medical Association and the South Carolina Hospital Association met with the Blue Cross staff.

It is hoped that the impact of this action by the Social Security Administration can be cushioned, but this could be idle wishing.

This is further evidence of the encroachment of Government on the private practice of medicine and decision making being transferred to the bureaucracy.

William L. Perry, M.D., President

LEST WE FORGET

P.L. 89-97 (Medicare Law), Section 1801

"Nothing in this title shall be construed to authorize any Federal officer or employee to exercise any supervision or control over the practice of medicine or the manner in which medical services are provided, or over the selection, tenure, or compensation of any officer or employee of any institution, agency or person providing health services; or to exercise any supervision or control over the administration or operation of any such institution, agency or person."

Editorials

Osteopathy Wins, South Carolina Loses

Since the day that osteopathy was made legally equal to medicine in South Carolina, there has been little evidence that practitioners of this discipline are girding themselves for a mass descent on the state. If and when this occurs, we await with bated breath—but not too long bated—to see them penetrate those areas lacking in medical service, the crossroads and the byways for which our legislators have had such concern. It would be a very fair bet to expect them to go where the action is, to the cities which already have perhaps an excessive share of practitioners and prosperity.

Forty five states and the military to the contrary notwithstanding, three southern states and distant Montana still hold out against the osteopath. They are still suspicious of his qualifications, still doubtful that his education and experience entitled him to equal privilege with the physician. Most of the states, including South Carolina, seem to pay little attention to the fundamental differences in the scope of professional education. The acceptance of present standards by the states does not promote the needed improvement in osteopathic education which might justify equality in recognition of competence.

Shades of Henry Koplik

What has become of the good old physicians who knew Koplik's spots and could make a "definitive" diagnosis on the basis of this sign alone? The question is rhetorical, but the fact is that with the rapid disappearance of measles, due to effective measures of control, the disease is relatively seldom seen and consequently the physicians of today do not acquire this special knowledge first hand from observation.

For the year 1968 only 31 cases were reported in South Carolina. Undoubtedly there were more, as physicians have an unfortunate tendency to dereliction in reporting cases of all kinds. Nevertheless the number is so small that it is quite likely that it will be smaller and smaller although strangely enough, there have already been reported 100 cases for the current year. This is probably a manifestation of the well-known cyclic habit of the disease, which from time immemorial has produced "measles years."

With this situation as it is, it appears to the State Board of Health that one should document measles by serological tests rather than depend on the clinical eye. Antibody titers determined at the outset and after the acute stage are recommended for all cases.

Incidentally we note that the disease is now spoken of as "red measles" rather than simply "measles." However the communications media insist on using the term measles for rubella, much to the confusion of this reader and many others.

DDT—Widespread Poison

At long last heed has been paid in some quarters to the continued indictment of DDT and related compounds. Some years ago Rachel Carson summarized dramatically the proven facts that these substances are gradually permeating our environment and causing extensive and lasting damage to many varieties of fish, birds, and animals, including man, who in his short-sighted course has tampered ignorantly with his ecology and is reaping the unhappy rewards of his stupidity.

Continuing study shows that these slow poisons are widespread over the earth. They are shown to be extremely harmful to wildlife and domestic creatures. Their value in agriculture appears not to balance

with the damage they do, and their stubborn resistance to disintegration renders them a very long term menace.

As the result of extensive exposure of evidence against the compounds at a recent important hearing in Wisconsin, the federal Department of Agriculture has suspended—permanently, it is to be hoped

—the use of these substances in all federally sponsored programs. This action has come about despite the strenuous efforts of the manufacturers who dispense these poisons. It is to be hoped that the bans will become permanent and worldwide. We have enough to guard against without poisoning ourselves.

QUIDNUNC

Fortunately for you, I must end, but not without leaving you with my firm belief in the present and future honesty, decency, skill, and wisdom of the vast majority of doctors. We have our scoundrels, we have our publicity and status seekers, we have our money grabbers, but we still have those among us who are willing to be skeptical and critical of ourselves. We must continue to police ourselves rather than be policed, for the very sound reason that medicine deals with the birth, life, and death of individuals, persons with more than flesh and

blood, persons who through mind and body fit into the grand purpose of a universe. Destroy his individuality and you have destroyed those unique qualities that make man strive against seemingly hopeless material odds toward what he believes to be progress. Is this not a purpose? I think it is. It is not to science or the humanities individually that the future will look but, rather, to man's boundless mind.

IRVINE H. PAGE JAMA:201,257

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ABBREVIATED MINUTES

SOUTH CAROLINA MEDICAL ASSOCIATION

HOUSE OF DELEGATES

ONE HUNDRED AND TWENTY FIRST ANNUAL SESSION

May 12, 13, 14, 1969

Ocean Forest Hotel

Myrtle Beach, South Carolina

JOEL W. WYMAN, M.D. Presiding

Monday, May 12, 1969

ORDER OF BUSINESS

9:30 A.M.

Dr. Wyman: We have now reached the time in the program where it is time for the presentation of resolutions. The floor is now open for this.

Dr. Francis B. Adams, Oconee: I am Frank Adams, representing the Oconee County Society. The Oconee Society in a regular meeting on April 21, 1969, passed the following resolution to be referred to the State Medical Association:

Resolved, that the South Carolina Medical Association be instructed to provide a placement service for the placement of physicians in the State.

The Chair: Thank you, Doctor. This will be referred to the Reference Committee on Miscellaneous Business.

Dr. Halsted M. Stone, Chester:

Whereas: The greatest health care need of the people of South Carolina is more primary health care.

And whereas: The South Carolina Medical Association recognizes that such a need of primary health care exists.

And whereas: This primary health care is rendered by Family Physicians, of which there is an acute shortage. This shortage of primary physicians can best be alleviated by an increase in the number of physicians training for this field of practice.

And whereas: Future physicians will not be encouraged to enter this field, even though now declared a specialty, unless these students and physicians have proper encouragement and training provided by a Department of Family Practice at the Medical College of South Carolina.

Therefore, be it resolved: That the South Carolina Medical Association does hereby endorse the establishment of a Department of Family Practice at the Medical College of South Carolina and further

urges that this be done as soon as possible and that the Medical College exert all efforts to foster and encourage this department and any students to enter into this field of training.

The Chair: This will be referred to Legislative and Public Relations Committee.

Dr. Tom Powell, Greenville (Recognized): As you know, these days there is a great deal of talk about sex education and the program of establishing the teaching of what is called sex education and various other things in the schools for about twelve years. This will amount to a new department. At the present time, I believe only English is taught for twelve years on a public basis. This is a resolution from the Greenville County Medical Society:

Resolution on sex education in the schools:

Whereas, the role of sex has been greatly over-emphasized of recent years, and the overemphasis is continuing, and

Whereas, sexual perversion, premarital sexual intercourse, and extra-marital sexual intercourse are being presented as permissible in a modern progressive society, and

Whereas, there is a national movement principally promoted by SIECUS (Sex Information and Education Council of the United States) to introduce instruction in sexual technique and "Family Living" into all grades of the schools, without accompanying moral or religious instructions, and with no pretense that such instruction will lower either venereal disease or promiscuity, and

Whereas, such premature and improper instruction can harm young people irreparably and permanently and thereby weaken the family and the nation, and

Whereas, it is immoral and unwise to separate sexual conduct from moral concepts, which are properly within the jurisdiction of the family, and

Whereas, compulsory education in sexual per-



Joel Wyman, Presiding

missiveness in Sweden has caused medical leaders there to deplore the results; and

WHEREAS, it is a matter of serious concern to society when technical sexual information is prepared and presented in such a manner as to appeal to the prurient interests of people in conflict with the moral order as embodied in Judeo-Christian ethic.

Therefore, be it resolved that the Greenville County Medical Society this 5th day of May, 1969 opposes incorporation of instruction in sexual technique or "Family Living" into the schools of the nation; and

BE IT FURTHER RESOLVED, that this resolution be submitted to the South Carolina Medical Association for its consideration.

The Chair: Thank you, Doctor. This will be referred to the Reference Committee on Miscellaneous Business.

Dr. William R. Craig, Greenville, (Recognized): Mr. President the Greenville County Medical Society instructed its representatives to register a protest against the use of the method of payment of benefits as coercion to become "participating physicians." Furthermore, that the physician be given a choice of the method of payment; that is, to the physician or to the patient, by incorporating an assignment of benefits clause in the insurance forms used by the Blue Shield and/or co-endorsement of checks made payable to the claimant by Blue Shield. This motion was passed unanimously by the Greenville County Medical Society.

The Chair: Thank you, Dr. Craig. This will be referred to Insurance, Blue Cross-Blue Shield.

Dr. Kilgore, Greenville: Mr. President, this was a resolution passed unanimously by the Greenville County Medical Society at its last meeting:

"Whereas, many members of the Greenville

County Medical Society have been taken to task by the Internal Revenue Service over professional automobile expenses, and

Whereas, others are being currently investigated, and

Whereas, it appears that the severe ruling emanating in the district office in Columbia is not being applied to our colleagues in other states;

Be it resolved, that this information be presented to the Legal Affairs Committee of the South Carolina Medical Association with a request that they investigate the matter, make recommendations and advise the members."

The Chair: Thank you, Dr. Kilgore, this will be referred to Legislation and Public Relations.

Dr. Albert E. Cremer, Columbia: "At a meeting of the delegates of the Columbia Medical Society on Monday, May 6, 1969, the following resolution was proposed:

Resolved, that the House of Delegates of the South Carolina Medical Association recommend to Council that the state Medical Association actively oppose the osteopathic bill now before the Legislature and request an open hearing before the Medical Affairs Committee of the Senate."

The chair: May I refer that, Doctor, to Legislation and Public Relations.

Dr. Cremer: (Continuing) "The Columbia Medical Society recommends that the South Carolina Medical Association set up a review commission to review medical aid fees and services. Also, if such a commission be set up by the Governor and Legislature, it is strongly urged that Council or House of Delegates recommend that physicians be adequately represented on this commission."

The Chair: I refer this to Legislation and Public Relations.

Dr. Cremer: "It was also recommended that the South Carolina Medical Association set up spot TV and/or radio medical programs in order to build up the image of the doctors and to keep the public informed as to what our medical societies are doing. In order to do this, it was recommended that dues to the South Carolina Medical Association be raised to provide a Public Relations Committee to help our Executive Secretary provide this much needed service."

The Chair: Thank you, sir. This is referred to Amendments to the Constitution and By-Laws. Thank you, Dr. Cremer.

Dr. Michael F. Patton, Spartanburg: I have two resolutions, Mr. President: the first is regarding the Cancer Society:

Whereas cancer is the one fatal disease for which there is the greatest opportunity for cure when properly treated in the early stage; and, since it causes no pain or ill feelings in early stages, it is the fatal disease which requires individual alertness and action to a greater extent than many other diseases; and

Whereas cancer killed 2,910 South Carolinians—over half of them between the ages of 21 and 64 last year (1967); more than four times as many as died in traffic accidents; and 6,000 new cases are predicted for South Carolina in 1969; and more than 650,000 now living in South Carolina are destined to have cancer at the present rates—one in four of us; and

Whereas the annual independent Education Funds Crusade of the American Cancer Society, South Carolina Division requires the enlistment and Funds Crusade of the American Cancer Society, educational training of more volunteer workers and reaches more people with a life-saving message, person-to-person, and therefore does more to alert people to the dangers of cancer and the ways to guard against it; and

Whereas the paramount purpose of the Education-Funds Crusade is to save lives from cancer now by encouraging annual physical examinations and alertness to the 7 warning signs of possible cancer, while at the same time appealing for voluntary contributions to help support programs of aid for indigent patients, expanding medical and scientific research and widespread programs of public and professional education, therefore

Be it resolved that the Medical Association of South Carolina fully endorses the work of the American Cancer Society, South Carolina Division, Inc., and its several county units, and commends the corps of volunteer Crusaders in their annual April Education-Funds Crusade to prevent needless suffering and untimely deaths caused by cancer, and urges every adult to heed the advice of the American Cancer Society to have an annual and adequate cancer detection examination and learn the early signs and symptoms of possible cancer.

The Chair: Thank you, Doctor. We will refer this to Public and Industrial Health.

Dr. Patton (Continuing): This is the second resolution:

"Whereas, problems often arise which are of mutual concern to the state Medical Association and the Medical College of this and other states and

Whereas, the state Medical Association has found it necessary in the recent past to request information and advice from representatives of our Medical College, and

Whereas, there exists at present no official position in the House of Delegates inviting the constant attendance of representatives of the Medical College during meetings of the House, and

Whereas, this has on occasion been cause for delay in obtaining information, reaction, and advice from the Medical College on matters of mutual interest and concern.

Therefore, be it resolved, that the constitution be amended to include the President of the Medical



Credentials Checked

College as an ex-officio member of the House of Delegates by adding to Article V, Section 1, the following:

(8) The President of the Medical College of South Carolina or his duly appointed representative."

The Chair: Thank you, Doctor. We will refer this to the Amendments to Constitution and By-Laws.

Dr. Forde A. McIver, Charleston.

The Chair: May I say right at this time, Dr. McIver, is our Parliamentarian. He is also a Delegate and also President of the Charleston County Medical Society. Dr. McIver.

Dr. McIver: Thank you. I am not getting anywhere on time, though. I have six resolutions endorsed by the Charleston County Medical Society. The first is related to both insurance and legislation, based on the fact that Blue Cross-Blue Shield felt it necessary to add a policy regarding coordination of benefits because its competitors had this, so we are making the following resolution:

"Many of our patients are being imposed upon by a clause which has been added to most group insurance policies—including Blue Cross carried by the South Carolina Medical Association. This is accomplished by a rider called "Coordination of Benefits," which has been added to group insurance contracts. This rider is legally allowed by the South Carolina Insurance Commissioner.

Many of us and our patients do not know about this until too late. Tens of thousands of working couples each carry family policy insurance coverage where both wife and husband work. This is paid for by both husband and wife as salary withheld, or as an employment benefit. The high cost of living and of medical care makes this a valuable arrangement. There are very rare cases in which a physician has abused this type of coverage. In every case, the extra protection is needed.

The patient is paying for protection for himself and his family. He expects protection in accordance with his schedule of guaranteed benefits. If his wife goes to work, he pays the same premiums for the same protection. She also pays for a family policy. When sickness strikes, this is what happens.

Should the wife have an operation with hospital expenses of \$650.00, her family policy is called the primary carrier, and her insurance pays according to its fee schedule and leaves a one hundred dollar deficit below hospital costs. Her husband's family policy also covers her, and according to its fee

schedule, should pay \$500.00. The premiums are paid up on both policies with reliable companies, but "Coordination of Benefits" steps in. The wife's policy pays all but one hundred dollars. The husband's policy should pay about the same for hospital charges, according to its fee schedule. However, it pays only the one hundred dollar deficit and pockets the balance. How is this explained by the insurance companies?

They claim that money provided by the terms of the contract, but retained by the insurance company (using their coordination of benefits rider) is used to show a favorable reflection in premium charges in years to come. The hitch is that the patient has paid for the protection himself for present expenses, and is not interested in individually contributing to possible group premium reductions some time in the future.

To insure the hospital's cooperation in finding out if the patient has more than one insurance policy, the hospital administrator must sign a "Hospital Sponsorship Agreement" in order to get paid. Among the requirements, it states "The hospital will also make a reasonable effort to obtain an assignment on any other group insurance held by a member." Paragraph II, Item 2, of the Hospital Sponsorship Agreement.

The requirement that our hospital admission and business offices seek out information as to a family's insurance coverage other than that needed for admission is an added burden on these overworked offices and, furthermore, constitutes an invasion of the patient's privacy.

This delegation believes we can be of service to our patients by having the "Coordination of Benefits" clause removed from group contracts in South Carolina and the Insurance Commissioner and his committee petitioned by Council to effect this change. Our local representatives should be informed of this wish and their assistance requested.

Therefore, be it resolved:

That the South Carolina Medical Association petition the Chairman of the Insurance Commission to revoke the "Coordination of Benefits" rider in all insurance policies in South Carolina, and,

That our Delegates to the American Medical Association introduce a similar motion to affect all such riders in the United States."

The Chair: Thank you, Doctor. We will refer this one to Insurance, Blue-Cross Blue Shield.

Dr. McIver: Is it possible to request also, since this as an amendment may require Legislation, that it might be referred to two reference committees?

The Chair: I will have to ask Mr. Meadors.

Mr. Meadors: I think he can refer part. I think he can divide it and refer part to one committee and part to the other.

The Chair: Yes, certainly this could be done. Do you have such a division that this can be done?

That it can be referred to two committees without confusion.

Dr. McIver: Well, as a result of the discussion with the Commissioner, there is some question as to whether he can do this or not, and if the Delegation, not the Society, but if the Delegation requests the amendment to the effect that if necessary, new legislation be sought. So that part particularly needs to go to the Legislation.

Mr. Meadors: Yes, Legislation and Public Relations.

The Chair: And part still needs to go to insurance.

Dr. McIver: The second resolution refers particularly to the crisis in Charleston and the possible effect on the closure of the Medical School and is stated as follows:

"Whereas, it is recognized that the Medical College of South Carolina is the only medical college in this State, and

Whereas, its very existence is endangered by a strike of hospital workers, and,

Whereas, the Union which is organizing this strike has focused attention upon aspects of the dispute of its own creation, that is, race and poverty, which are not cogent nor crucial to the issue, and,

Whereas, the Union is supported in its activity by a Concerned Clergy Committee of unknown qualification in hospital work and both have encouraged participation of the Southern Christian Leadership Conference in this strike, and,

Whereas, the strike has become a national promotional contest for furthering the aims of the Southern Christian Leadership Conference, and,

Whereas, the Medical College Hospital may have to close because of projected future inability to furnish services to ill patients requisite to needs, and,

Whereas, in the event of closing the hospital and the Medical College, the loss to the community and to the State would be inestimable, and its closing would deny many citizens the expert medical care that they need, and

Whereas, the loss of the professional staff of the Medical College and its hospital would be an incalculable loss to the medical community of the State,

Be it resolved that the South Carolina Medical Association voluntarily and vigorously affirm to the Medical College its full continued and energetic support."

The Chair: Thank you, Doctor: (Applause). We will refer this to Legislation and Public Relations.

Dr. McIver: Next is a resolution pertaining to the same problem.

"That the South Carolina Medical Association express its gratitude and appreciation to the hundreds of loyal, dedicated, and conscientious hospital workers, both voluntary and salaried, who, at great personal cost in time and effort, and in the face of threats, have continued to serve the needs

of the ill of this state during the crisis in Charleston."

The Chair: Thank you, sir, and we will refer that to Legislation and Public Relations. I certainly agree wholeheartedly with that.

Dr. McIver: The next is related to the same topic.

"Whereas, the Government of the State of South Carolina constitutes a republic, democratically elected, and,

Whereas, under such a Government, all the people of South Carolina enjoy the blessings of freedom and liberty, and

Whereas, the people of South Carolina are now subject to the threat of civil turmoil, anarchy, and violence due to the words and actions of certain of the State's own citizens, and of union leaders and organizers and racial agitators foreign to South Carolina, and,

Whereas, submission to these threats and to the demand for unionization of public employees in this State will weaken the power and ability of the freely elected officials of this State, both executive and legislative, to govern wisely and to preserve firmly the freedom of all our citizens, and,

Whereas, the time has arrived for South Carolinians, and for that matter, all Americans, to resist the subversion of our republic by racial agitators and promoters of violence whose political motives are dubious and suspect.

Now be it resolved that the South Carolina Medical Association, in annual convention, May, 1969, commends and supports the words and actions of the Governor of South Carolina and the Mayor of the City of Charleston and their respective administrations in their recent management and control of the demonstrations and violence related to the attempt in Charleston to unionize hospital workers at the State and County Hospitals, and,

Be it further resolved that the South Carolina Medical Association supports and commends the Governor of South Carolina and the State Legislature in their steadfast refusal to recognize any union of public employees of this State." (Applause).

The Chair: We will refer that to Legislation and Public Relations.

Dr. McIver: (Continuing) This is related to the concern about preparing physicians to meet the needs of the practice of medicine in this state. There is some concern among our delegation about the wording, the intent might be misconstrued, I say that because we are united in our interest, but there is some question, which will be presented in discussion at the reference committee.

"Whereas, there has been a demonstrated need for primary physicians to render medical care to the public on an individual and personal basis, and,

Whereas, organized medicine has recognized family practice as a medical specialty, and,

Whereas, the practicing physician has become increasingly dissociated from most aspects of medical education, and,

Whereas, the medical student in his formative years is not given the opportunity to be exposed to the ideals and purposes of the practicing community physician, and,

Whereas, this lack of association is reflected by a diminishing interest in primary medicine by medical students, and,

Whereas, the voice of radical groups advocating unproved methods for delivery of medical care is influencing the medical student disproportionately, and,

WHEREAS, the proper balance between clinical and research-oriented faculty has been lost, and,

Whereas, the Constitution of the Medical College of South Carolina affirms that its primary purpose is to supply general practitioners to the State of South Carolina,

Therefore, be it resolved, that the South Carolina Medical Association emphatically endorses this purpose and recommend that the curriculum of the Medical College of South Carolina be modified to foster these purposes. And further, that there be established at the Medical College of South Carolina a residency in family practice equal to, or superior to other graduate training opportunities.

Therefore, be it resolved that the South Carolina Medical Association support this program in every possible way."

The chair: This will be referred to the Committee on Miscellaneous Business.

The Chair: Thank you, Dr. McIver. Are there further resolutions?

If not, we will now ask for the supplemental reports from Committee Chairmen. Any supplemental reports from any Committee Chairmen?

Dr. McIver, Charleston: May I request a clarification on this point? If this resolution is to be discussed by this body as convened, as a Blue Shield Board, perhaps it should be read at this time, and then may be referred. But, I had not thought that would be necessary. I thought it could be presented a little later this morning in the Blue Shield meeting.

Dr. McIver: The Charleston County Medical Society proposes the following amendment to the By-Laws of Blue Shield of South Carolina:

That Article III, Section 2 be amended by adding at the end of the paragraph: "A Director may serve not more than three consecutive terms of three years."

The Chair: Thank you, this will be referred to Insurance, Blue Cross Blue Shield. We will ask for Supplemental Reports from Committee Chairmen. The floor is now open.

Dr. Kenneth N. Owens, Aiken: Mr. President, I want to apologize for not getting our report of the Medical Advisors Committee to Selective Serv-

ice in time for it to be published. It is very short.

During 1968, there was a callup for five men. That was filled by doctors finishing their internship. And in this year, there was a call for three men, that was reduced to one, and two volunteered, so they got more than they really needed but two men wanted to finish their obligation. So that is our report.

I would like to take this opportunity to thank the members of my committee who worked with me so diligently over the period of years. I have asked that I be replaced as Chairman of the Committee, and I just want to say that these men have been very fair in their evaluation of requests and I want to thank them of this time for working with me so diligently.

The Chair: Thank you, Doctor Owens. This is referred to Miscellaneous Business.

We are going back a little bit, and we are going to call for a report of the Executive Committee of the State Board of Health. Dr. W. Wyman King, Chairman. Dr. King.

Dr. W. Wyman King: Mr. Chairman, our report has been published. We have no additions. (Laughter and Applause).

The Chair: This is referred to Public and Industrial Health. It is an excellent report and I hope all of you will read it. It is published in the Journal and is one of the best I have ever seen. I congratulate you, Dr. King and the others connected with it.

Now, proceeding along, is Dr. William Turner here? Our Report on State Board of Medical Examiners, Dr. William Turner, Chairman. (Dr. Turner did not respond) Is there any member of his committee here? Are any of you here, and prepared to give this House any committee report? Well, maybe Dr. Turner will come in or some member of that Committee, and give us a report later.

There are, as our Excellent Executive Secretary has pointed out to me, printed reports in The Journal, Committee on Legislative Activities, this is referred to Committee on Legislation and Public Relations; Medical Advisory Committee to the South Carolina Vocational Rehabilitation Department, this report is referred to Miscellaneous Business; Committee on Industrial Medicine Report, referred to Public and Industrial Health; Advisory Committee to Woman's Auxiliary Report, referred to Miscellaneous Business; Committee on Infant and Child Health, referred to Committee on Miscellaneous Business. The Public Relations Committee report referred to Legislation and Public Relations; Report of the Advisory Committee of the Crippled Children Society referred to Miscellaneous Business; Committee on Historical Medicine referred to Miscellaneous Business; and I believe that completes them all.

Since we are running ahead of time and the



House In Session

ladies are due in fifteen minutes, I think we might try and get rid of some of the reports of officers and I will now ask Dr. Weston if he will take over this chair, and when the ladies are announced, Dr. Godwin, if you will let us know, I am sure Dr. Weston will interrupt the Reports of Officers so that we can greet the ladies of the Auxiliary. Dr. Weston.

Dr. C. Tucker Weston, Columbia, (Recognized):

Thank you, Dr. Wyman, and I am going to turn the microphone right back over to you because you are the first officer with a report, so we will call on Dr. Joel Wyman, who has served so well as our President, in the past year, for his report.

Dr. Joel Wyman, (Recognized): Thank you, Dr. Weston.

"Members of the House of Delegates:

This has been a busy year. There have been two special meetings of the House of Delegates to consider unusual and urgent problems of the Association. Your Council has had to meet almost monthly to consider problems which affect every physician in the State and also the welfare of the people of South Carolina.

Some of these problems have occurred because of the many federal programs which have become operative at the State level. These included implementation of Title XIX, The Regional Medical Program and Comprehensive Health Care Planning. Additionally, there is the Moody Report on a State level which has been considered and which will need more study depending on what the Legislature does in its present or future sessions.

Thus, it becomes apparent that more physicians must become involved in directing and counseling these programs from the county to the state level if we are to preserve our present method of delivering health care to our friends and neighbors. To do less would mean that the care and healing of the sick will administratively be taken over by others whose objectives are not always parallel to our own.

Many of us have spent many long and concerned hours in meetings representing what we believed to be the best interest of the people of South Carolina and the private practice of medicine. The two go hand in hand. Opinions expressed by various groups have not always been unanimous, but it is my opinion that the best interest of the patient is served by a friendly, personal and interested phy-

sician rather than in a cold, impersonal, government sponsored clinic, where understanding and the personal equation may well be lacking.

Generally we need better organization at all levels—County, District and State. It is realized that the average physician is interested and may wish to become involved in many endeavors, but his time away from his practice obligations is extremely limited. Help is, therefore, needed to aid him to fully understand and evaluate the meaning of the social and medical change which is evolving around him and his fellow physicians. This, I believe, can be accomplished through employment of a field and public relations man by the South Carolina Medical Association to inform and work with our Societies at all levels. A Committee appointed by Council and headed by Dr. Howard Stokes has reviewed this matter in detail and recommends that such an individual be employed. His area of work would include County, District and specialty Societies. He would also aid our various committees in their important work in many areas. I know that much accurate and vital information is needed if organized medicine is to accomplish its mission properly in this day of instant demand for services. This, of course, will mean a raise of your dues at the state level in order to bring this about. This should be viewed, in the light of the current Socio-Economic Scene, as an investment in your life's work rather than a burden of membership.

This past year, the Medical Society of North Carolina, recognizing this same situation, raised its annual dues to \$155.00. Of this amount, \$25.00 was to employ additional field men. This also includes an assessment of \$60.00 a year for a five year period to finance a headquarters building. Our current state dues are \$45.00 annually and must be increased, if our needs are to be met. I recommend this wholeheartedly for your consideration. If I may quote Phillip Lesley, who said, "In a world of explosive change, no organization or profession can afford to be complacent or stable. It must be fluid, alert to new trends and able to adjust."

We urgently need greater participation in SCALPEL and AMPAC by all of our members if we are to cope positively against the inroads of federal intervention in the practice of medicine. I strongly urge each of you to accept as an individual responsibility solicitation of additional individual memberships in your local societies. We must have an organized effort to prevent the complete socialization of medicine and to help in the preservation of the free enterprise system.

I have tried in these few words in a general way to alert you to some of the problems faced by organized medicine. I do not think that we can overcome our critics without great effort and without the expenditure of money. But in the end truth will prevail if we continue to function as truly dedicated physicians.

In closing, let me thank the many members of this Association, including members of Council, past Presidents, the Executive Secretary and his staff for their wise counsel and devotion to duty. I know of the sacrifice in time and effort which they have all made. To those who succeed me, I wish the greatest success and assure them of my cooperation in all areas for the benefit of mankind and this Association."

(Applause and standing ovation).

Dr. Weston: Mr. Chairman, the response of this group to your address, needs no amplification to express the appreciation of all of us on behalf of the South Carolina Medical Association for the tremendous dedication and effort that you have put into the job as President this past year.

Dr. Wyman: Thank you.

Dr. Weston: Gentlemen, the ladies of the Auxiliary. Will you please stand and give them a hand? (Gentlemen standing and applauding)

Dr. Joel Wyman, The Chair: We are certainly happy to have these ladies and want them to know how proud we are of them. I assure you that I have been working with the Woman's Auxiliary and, of course, they are very active and I know of their efforts in the past and I know that the things that they have done have been of tremendous value and I would wish to express to them now my personal appreciation and I know I express your appreciation for all their efforts.

Now, at this time, I would like to introduce the President of the Woman's Auxiliary, Mrs. Gazes from Charleston. (Applause).

Mrs. Gazes: Thank you, Dr. Wyman.

Mr. Chairman, Members of the House of Delegates, and guests:

I know how valuable your time is and Mrs. Moise and I are grateful that we have been afforded the opportunity to come before you.

It is my pleasure at this time to present very briefly some of our years highlights.

Service is not new to the Woman's Auxiliary and continuation of effective Auxiliary programs has been carried on.

Community health was particularly emphasized throughout the state in a variety of ways. Health education was the most effective method of reaching the most people, especially the schoolage children. Lectures on drug abuse, smoking, drinking, and sex education were in most cases given in the schools by physicians or qualified personnel.

For the first time this year one Auxiliary provided for emergency transportation to and from the clinics for persons who otherwise could not attend.

Another first for the year was our first State Workshop. This met with such favorable success that it has now become an annual event.

We have a very active health careers program in progress which encourages the young people to



Mrs. Moise Addresses Delegates

enter the health career fields, and thus helps alleviate the manpower shortage in this area; and still another first this year is the pride we have taken in the fact that the Charleston Intern and Residents WASAMA Chapter was nationally recognized by receiving the top three national awards: Chapter of the Region, Chapter of the Nation and Best Newsletter of the Nation.

Contributions to AMA-ERF, the Benevolence Fund, Health Career Scholarships, and our Student Loan Fund have all been substantially increased this year.

The fellowship derived from working toward common goals is one of the rewarding aspects of Auxiliary work.

A more complete report of our year's activities appears in our Convention Program Book which is available at the Auxiliary registration desk.

It has been with pride that I have been afforded the honor to represent the Woman's Auxiliary to the South Carolina Medical Association this past year." Thank you. (Applause)

The Chair: Thank you, Mrs. Gazes, for this fine report.

And now it is my pleasure to introduce to you another lovely lady, Mrs. Davis D. Moise, President-Elect to the Woman's Auxiliary.

The Chair: Mrs. Moise, we are delighted to have you. (Applause)

Mrs. Davis D. Moise: Thank you.

Dr. Wyman and Members of the House of Delegates:

It is an honor and a privilege to be a doctor's wife and a member of the Medical Auxiliary. With every privilege there is responsibility, and we, in the Auxiliary, accept this responsibility with pride.

I have spent much time during the past year learning my duties and responsibilities.

State Board members have been selected for

1969-1970, and we hope to continue and to expand the fine programs that have been in progress this past year under the capable leadership of Athena Gazes.

I am looking forward to the next year, and we, the Woman's Auxiliary to the South Carolina Medical Association, pledge you our full support." Thank you. (Applause).

THE CHAIR: Will you gentlemen escort these ladies out.

(Members of Ladies Auxiliary leave room).

I will ask Dr. Weston to return to the Chair for the further Reports of Officers. Dr. Weston.

Dr. Weston: It will now be our privilege to hear from our President-Elect who has served on Council for nine years and is Chairman of Council and has served last year as President-Elect, Dr. William L. Perry of Chesterfield. (Applause).

Dr. William L. Perry, Chesterfield:

(Standing ovation).

You will see that the first business is to bring this microphone down to my size. (Laughter).

Mr. President and Members of the House:

My report is more in the form of remarks, or better still, compliments. I want to inform you that Mr. Meadors has a very efficient staff. They are most courteous, efficient and most anxious to assist, and I want to thank them for the job they are doing for this Association.

Council has been its usual diligent self, sincere, hardworking and efficient. It deserves your continued confidence.

The Secretary, Dr. Pope, has done a terrific job just to follow the able Dr. Miller. He has done a terrific job. He is to be complimented for this. The Treasurer, Dr. Stokes, he too has done his usual job, which is always great. I would recommend his continuance in office. (Laughter).

The Executive Secretary, Mr. Meadors, he too has done his usual terrific job. He is the SCMA personified in one person, or perhaps we should say, he is Mr. SCMA. I recommend that he be kept with us. (Laughter.)

The Editor, Dr. Waring, words fail me in my efforts to try to describe this man. I say to you that he is irreplaceable. He is an Editor, a man, a physician and a gentleman par excellence. Nothing more is necessary.

The Delegates to the AMA. During my ten years on this Council, we have been represented by able men, both delegates and alternates, and the present team is no exception. Dr. Tom Parker is most able and he has done an excellent job during this past year.

And as for you, Dr. Cain, I compliment you for the job that you have done for the past twenty years for this Association. It has been tremendous and this Association owes you an undying debt of gratitude. You, too, have been a great tutor for me, and I thank you most sincerely.

The Chairman of Council, Dr. Booker, has done a terrific job. He has been on top of things and I say to you, Jake, that when this convention closes, adjourns, you will have finished nine years of splendid service to this Association. During this time, you have piled up many laurels. This year has been your crowning glory, and I take my hat off to you. I hope this Association will find some future use for this man.

The Vice President, Dr. Weston, he has filled his position extremely well. His contributions to the Council and this Association have been manifold. He has been a great value and we thank him sincerely.

And now, Mr. President, My feelings for you are mixed. (Laughter). You have worked so hard, so many hours, have handled things so well, have been the proper image as our President, that you make my job even more awesome. I compliment you and dread to follow you. I recommend to this House that this man not be turned out to pasture. Thank you. (Applause).

Dr. Weston: We will now call our hard working Executive Secretary to the microphone for his report and we again want to say what a wonderful job he is doing for the Association, Jack Meadors. (Applause).

Mr. Jack Meadors: Thank you very much, Dr. Weston for those kind words.

Membership in the Association last year reached a total of 1655. Of this number, 1490 paid dues, there were 23 in the category of Junior Members, and 16 service members. One hundred and twenty six were active members in good standing, but exempt from payment of dues under the By-Laws. This total represents a net increase of 13 over the previous year. During 1968 we actually acquired 65 new members and 3 who had previously dropped their membership were reinstated. Twenty members died and 22 were dropped, principally for non-payment of dues.

The large majority of our members also belong to the American Medical Association. Thirteen hundred, eighty-five paid dues to A.M.A. There were 140 active members, but exempt from dues and 23 listed as Associate members. The latter are our Junior Members, who, under the By-Laws of A.M.A., are exempt from payment of dues to that organization so long as they maintain this status. Accordingly, there were a total of 1508 of our members who are also members in good standing of A.M.A. This, we feel, is an excellent record for the Association, when it is considered that membership in A.M.A. is entirely voluntary.

The record continues good for this year. Up to the present time, 1373 physicians have paid dues to the state Association and 1257 to A.M.A. It should be recalled that all A.M.A. dues are collected through the state office. This more than doubles

the amount of money which is handled, over that which would be collected if only our state association dues were involved. All but a very small percentage of the dues to both organizations are collected by the county secretaries and treasurers and remitted by them to the state office, where, in turn, we deduct the state's portion and remit and account to the A.M.A. for the amount belonging to them.

In addition to these amounts, we received last year \$4,340.00 in contributions to AMA-ERF. This amount has tended to decrease somewhat over the past few years, since the considerable raise in the dues to A.M.A. a few years ago.

Dues to SCALPEL, also, are included on the Association bills, and we received and remitted \$4,480.00 to this organization from 224 members. This, we understand, does not represent the total membership in SCALPEL, since some of the physicians remit the dues directly to their Treasurer.

The work of the Administrative Office has continued as usual, with a steady increase. Accurate records of membership are maintained and membership cards mailed to each physician as his dues are received. We continue to maintain good liaison with A.M.A. and assist the president of the Association in providing representation from South Carolina to the various A.M.A. meetings, of which there are many. We frequently have occasion to contact various departments of the national organization for information to supply our members on request. We attended the annual and interim meetings of the House of Delegates of the American Medical Association, and this, as in the past, has enabled us to be cognizant of developments in the national organization and to have first-hand knowledge of the background of the development of A.M.A. policy on various matters of interest to the profession.

The Business Manager of the Journal is located in our office and all of its business affairs, including the collection for advertising and payments of the printing and other bills handled there. We regret to report that receipts from advertising in The Journal decreased considerably last year to \$29,591.89. The revenue from this source in 1967 had been \$35,713.00. The decrease was not confined to South Carolina, but was part of a trend which was developed in the past year or two, and is the result of several factors which are beyond the control of the journals, themselves. Most of our advertising continues to be placed through the State Medical Journal Advertising Bureau with its headquarters in Chicago, closely connected with headquarters of A.M.A. Despite this decrease in revenue, we broke nearly even on The Journal operation, since the cost of printing amounted to \$25,472.00, and other expenses of The Journal hardly exceeded the difference between this and the amount of the revenue.

Records of all the investments are maintained in our office, along with actual custody of the securities in which the funds are invested. These are sound investments, approved by the Investment Committee and Council, and are kept in the highest interest producing accounts available for this type of investment.

Some idea of the additional amount of activity of the Association during the past year may be obtained from the fact that no less than six special meetings of Council have been held since last May. This is in addition to the two regular meetings, and they were called for the purpose of discussing proposed legislation in which we were interested, and such things as the Moody Report and Title XIX. In the matter of legislation, that which has claimed the principal interest and most of the time of the officers and members of Council, has been that with respect to osteopaths, the perennial problem throughout the past decade, or more.

Fairly early in the Legislative Session, three bills were introduced in the House of Representatives, almost identical with the three bills which had been introduced and killed in 1967. One of these proposals would add an osteopath to the State Board of Medical Examiners and provide for examination of osteopathic applicants by that Board. Another would permit osteopaths to administer and prescribe all types of drugs to the same extent as do doctors of medicine. The third would provide for recognition of the licenses granted by the existing Board of Osteopathic Examiners and require those practicing as such to be designated as "D. O.", or doctors of osteopathy.

As soon as the bills were introduced and referred to the House Committee on Military, Public and Municipal Affairs, a public hearing was requested and granted by the committee, and the time was fixed at an early date. In the meantime, on February 19th, Council met, and appointed a special committee consisting of Dr. J. P. Cain, Jr., Dr. William L. Perry, and J. Harvey Atwill, with Dr. William McCord and Dr. Norman Eaddy acting ex officio, to consider the matter along with the State Board of Medical Examiners, and direct the Association's course. Accordingly, prior to the date fixed, the public hearing was called off and the special committee met with a sub-committee of the House Committee on Military, Public and Municipal Affairs, and the osteopaths. In a lengthy discussion, tentative suggestions for modifications in the bills were worked out, which, it was thought, might be agreeable to the medical profession and to the osteopaths, and which the Legislative sub-committee seemed to favor. These were presented to Council at another special meeting, and were fully discussed and approved by Council, with the direction that a meeting of the House of Delegates be called for the purpose of making final determination.

This meeting of the House was attended by approximately one third of its total membership. The matter was debated vigorously, pro and con, and resulted in the decision by a substantial majority that the proposed agreement not be approved, but that the House and the Association continue to oppose vigorously the three osteopathic bills. An ad hoc committee was appointed by the president to handle the continued opposition. A public hearing was again set for March 21st, at which time, the positions of both the osteopaths and the medical profession were presented at length. Following the hearing the Committee reported the bills favorably in their original form, and reintroduced them as Committee Bills, thus giving them considerable additional prestige on the floor of the House.

A short time later, the three bills passed the House of Representatives, though not without opposition, and were read the first time in the Senate and referred to the Committee on Medical Affairs. There they remain. Through the efforts of Dr. Frank C. Owens and other friends in the Senate, the bills have been held to the present time, but it is our information that a strong effort will be made to have them reported out in the near future and that prospects for their passage in the Senate are good.

Another bill which has recently claimed the interest of the profession, is that to do away with the State Department of Health and its Executive Committee and the Department of Public Welfare, combining the functions of both these Departments under a new Board of Health and Social Services. This, again, is a Committee Bill of the Committee on Military, Public and Municipal Affairs of the House of Representatives. A public hearing was held on the measure a few weeks ago, and strong opposition expressed to it, principally by persons connected with the Department of Public Welfare, or its numerous county organizations. Pursuant to the direction of Council, the President, Dr. Wyman, presented a statement on behalf of the Association, in which he expressed our objection to the form of the proposed new Board. Under the bill, as drawn, this Board would consist of seven people, all appointed by the Governor, one from each Congressional District and one from the state-at-large, who would be chairman. There is no provision for any physician to be a member of the Board, and it is the feeling of the Council, as expressed by Dr. Wyman, president, that the law should provide for a minimum of three physicians on the Board. The House Committee has not taken action on the bill, or at least no action has thus far been reported.

The Association has given its approval to two other bills now pending in the General Assembly. One of these is the Uniform Anatomical Gift Act, in the form approved, after lengthy study by both the American Medical Association and the American Bar Association. The other is a bill to revise

the Abortion Law in South Carolina, so as to permit this operation, under given circumstances, not now recognized as sufficient to legally warrant its performance. This bill is in line with the policy adopted by A.M.A. at its meeting in 1967, and is very similar to the bill which has already been passed in North Carolina.

The foregoing are the principal matters with which our office has been concerned during the past year. We appreciate very much the friendly cooperation and support of Dr. J. P. Booker, Chairman of Council, Dr. Joel W. Wyman, the President of the Association, Dr. Perry, President-Elect, Dr. J. Howard Stokes, Treasurer, without whom we couldn't navigate at all in Florence, and Dr. Pope, the Secretary. Our contacts with the members of Council have continued to be most cordial and their support of our efforts is very greatly and very genuinely appreciated."

Dr. Weston: Thank you, Mr. Meadors. We will now call on our hard-working Secretary with the dark colored coat on down there. Dr. Strother Pope. (Applause).

Dr. Strother Pope: The Secretary has no formal report. I would like to belatedly pay tribute to my fellow-Columbian, Dr. Ben Miller. I never realized how much the Secretary was supposed to be doing and what a wonderful job Ben had done until you punished me with this job.

Now I would plead for one thing. When the Secretary is in Columbia, that is the SCMA, the Executive Secretary is in Florence, the Editor of The Journal is in Charleston, and the President is in Anderson, you can realize there is a certain amount of slackness in communication in expediting real pertinent information that should be disseminated to the various members of the Societies and to the Delegates. Please send your reports, your committee reports that are supposed to be published, please send them directly to Editor Waring in Charleston. We have eight or ten reports that have not been published because one of them was sent to me. It is a 20 page report and I did copy 400 pages and sent them to councilmen, but I would not do 2800 pages and assemble them this morning because you would not have time to read them even if you were interested in going through these. Please send your reports to the Editor so that they can be published. Send me a copy and send the Executive Secretary a copy. This will get the information before the agencies and various components of the state societies.

The other thing that I would ask you is, if you do, and I hope you do pass the resolution to give Jack some help, this in the public relations field, consider establishing an office in Columbia. Now I know this is not a popular thing to set forth, this is a personal view and not necessarily reflecting the views of my own medical society. But actually, the hub is in Columbia. If we do establish a central office, I think it would be of tremendous help to Jack



Secretary Reports

and I wish to thank Mr. Meadors for his tremendous cooperation with me, in keeping me informed and giving me information that I should have. Thank you. (Applause).

Dr. Weston: Thank you, Doctor, Pope. I am going to get a little out of order now and call on the Chairman of SCALPEL to come forward and give us his report. He has to meet a plane and get Dr. Annis. So I am going to call on Dr. Donald Kilgore of Greenville.

Dr. Donald Kilgore: Thank you, Dr. Weston.

During 1968, 234 members contributed \$4,680.00 for the support of political candidates friendly to doctors. Half of this money went to South Carolina candidates; the rest went to AMPAC for use in campaigns particularly crucial for medicine's friends in the United States.

Candidates were supported in all Congressional and Senatorial races in South Carolina, with considerable success. Nationwide, AMPAC was quite successful also. In South Carolina, the successful candidates were quite appreciative of the support of SCALPEL and AMPAC.

This coming weekend, your Chairman and four other members of SCALPEL will attend the annual Public Affairs Conference of AMPAC in Washington, D. C.

Friday morning we will get an all morning briefing on legislation of medical interest by the Washington Office of the A.M.A. Friday afternoon we will personally visit the two Senators and six Representatives from South Carolina. We will want them to know that South Carolina doctors are interested in and are watching their actions. We hope to establish better communications between our Congressmen and the physicians of South Carolina. If any members here today have any matters they wish brought to the attention of our

Representatives, please let me know. We will endeavor to bring these to their attention.

Nineteen sixty-eight may have been a turning point, or at least a breathing spell, in the battle against the socialistic tide which threatens to engulf us all. But as Dr. Wyman has pointed out, we need to be prepared for Nineteen Seventy. Tonight, Dr. Edward Annis who is the speaker at the SCALPEL Banquet will show you the picture much more eloquently than I ever could. But in the final analysis, success or failure depends upon the support that you give to SCALPEL and which other doctors in other states give to their state PAC movements. Thank you. (Applause).

Dr. Weston: Thank you, Dr. Kilgore. I would like to add to his report an urgent appeal to all of you to consider joining SCALPEL for this \$20.00 that is added on to your dues, which unfortunately is not tax deductible, and also join for your wives. Sixteen hundred and fifty five members of the South Carolina Medical Association and two hundred thirty four members of SCALPEL, one out of eight. We certainly are more interested in what is happening in Government than one out of eight doctors and you certainly ought to support it.

We now call on our Treasurer, Dr. Howard Stokes of Florence, for his report.

Dr. Howard Stokes, Florence: Mr. President, I am very happy to join this "love in" that we have

been having this morning. (Laughter). I kind of get the idea that I have been fixed up for the kill. (Laughter). I am reminded of the story that had to do with the sixty year old husband of Barbara Hutton, after following Brother Pope. I know what I am supposed to do but I am not sure I can make it entertaining enough for you. (Laughter). I, too, would like, since I am not exactly sure what is going to happen to me, I would like to congratulate this House of Delegates on its Council. Now this has been a rather trying year for the state Medical Association. And your Council has shared in many of these very trying moments. So I tell you gentlemen, you are to be congratulated on having the body that has handled the affairs of the State in a very orderly fashion. I will probably just go on out with them.

Now my report, of course, basically has to do with the revenue that we obtained last year. This is a 1968 report. The first portion is really a condensation of a more detailed audit for 1968. Pertinent information in the audit will be presented and the summary along with the audit, as usual, will be published in the Journal of the South Carolina Medical Association.

(Dr. Stokes turned in the report of Raymond R. Finch & Co., Certified Public Accountants, Columbia, South Carolina, for printing in the Journal. This report follows:

Accountant's Report
South Carolina Medical Association
Florence, South Carolina
Balance Sheet
December 31, 1968

ASSETS

Current Assets:

Cash in Bank—Guaranty Bank and Trust Co.	\$ 689.62	
Accounts Receivable—Employees	2,401.91	
	<hr/>	
Total Current Assets		\$ 3,091.53

Investments:

Peoples Federal Savings & Loan Association	\$ 14,694.39	
Investors Mutual Fund	69,573.98	
First Federal Savings and Loan Association, Aiken, South Carolina	11,901.91	
Security Federal Savings and Loan Association, Aiken, South Carolina	11,929.95	
First Federal Savings and Loan Association, Anderson, S. C.	11,901.94	
Anderson Savings and Loan Association, Anderson, S. C.	11,927.93	
Home Building and Loan Association, Orangeburg, S. C.	11,909.64	
Pickens Building and Loan Association, Pickens, S. C.	11,417.35	
South Carolina National Bank, Florence, S. C.	7,100.00	
Total Investments	<hr/>	
		\$162,357.09

Fixed Assets:

Furniture and Fixtures	12,470.89
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Other Assets:

Deposits	3.00	
Prepaid Interest	72.77	75.77
	<hr/>	

TOTAL ASSETS	\$177,995.28
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LIABILITIES AND SURPLUS

Current Liabilities:

Withholding Taxes \$ 1,232.21

Surplus:

Balance, December 31, 1967 \$156,667.67
 Excess of Revenue over Expense 20,095.40
 Total Surplus \$176,763.07
 TOTAL \$177,995.28

South Carolina Medical Association Florence, South Carolina Statement of Revenue and Expense January 1, 1968 to December 31, 1968

Revenue:

A.M.A. Dues \$97,720.00
 Membership Dues 55,744.00
 Subscription Dues 4,924.50
 A.M.E.F. Receipts 4,340.00
 Advertising 29,591.89
 Benevolence Fund 766.34
 Directory of Members 517.05
 Interest and Dividends 9,784.00
 County Dues 900.00
 S.C.A.L.P.E.L. 4,480.00
 Permanent Home Fund 7,537.50
 Commissions on Collections—A.M.A. Dues 974.30
 Gross Revenue \$217,279.53

Less—Expenses:

Newsletter \$ 512.26
 Insurance 1,254.70
 Journal 25,472.06
Salaries:
 Editor \$ 2,400.00
 Executive Secretary and Counsel 15,000.00
 Secretary and Others 20,085.00 37,485.00
 Telephone and Telegraph 1,738.76
 Travel Expense 4,176.28
 Bookkeeping and Audit 1,087.50
 Public Health Information 177.08
 Rent 2,700.00
 Office Expense and Supplies 1,717.56
 Taxes—Payroll 953.72
 Refunds and Transfers 1,346.00
 Miscellaneous Expense 809.19
 Postage 881.57
 President's Office Expense 1,515.89
 Editors' Office Expense 638.79
 Women's Auxiliary—Bulletin 1,944.84
 Women's Auxiliary—Appropriation 733.50
 Conferences and Meetings 749.66
 Treasurer's Office Expense 100.00
 Committee on Public Relations 259.61
 Medico Legal 500.00
 Benevolence Fund 900.00
 A.M.A. Dues Remitted 97,050.00
 Interest 61.95
 Miscellaneous Committee Expense 899.59
 Committee on Careers in Medicine 55.00
 Delegate to Student A.M.A. 180.00
 President's Gift 181.80
 Hospitality Room 357.98

Historical Committee	1,487.57
Dues and Subscriptions	441.75
S.C.M.A. Retirement and Pension Plan	3,909.57
SCALPEL	4,440.00
Returned checks	465.00
Total Expenses	
Excess of Revenue Over Expense	\$197,184.18
	\$ 20,095.40

**South Carolina Medical Association
Florence, South Carolina**

Statement of Cash Receipts and Disbursements

Year Ended December 31, 1968

Cash Balance—December 31, 1967

Guaranty Bank and Trust Company	\$(525.62)
Peoples Federal Savings and Loan	14,004.60
First Federal Savings and Loan, Aiken, S. C.	11,344.42
First Federal Savings and Loan, Anderson, S. C.	11,351.89
Security Federal Savings and Loan, Aiken, S. C.	11,344.45
Home Building and Loan Association, Orangeburg, S. C.	11,339.61
Anderson Savings and Loan, Anderson, S. C.	11,351.82
Pickens Building and Loan, Pickens, S. C.	11,143.03
Total	\$ 81,354.20

Receipts:

Revenue for the Year—EXHIBIT "B" \$217,279.58

Other Receipts:

Payroll Taxes Deducted from Empolyees Salaries 6,579.88
Loan from Peoples Bank of South Carolina 1,227.72

Total Receipts \$225,087.18

Total Available Cash \$306,441.38

Disbursements:

Expenses for the Year—EXHIBIT "B" \$197,184.18

Other Disbursements:

Furniture and Fixtures Purchased 1,635.60
Mutual Fund Reinvested 5,488.21
Increase in Accounts Receivable 473.23
Payments on Loan from Peoples Bank 716.17
Prepaid Interest 72.77
Payroll Taxes Deducted from Employees Salaries and Remitted 7,398.49

Total Disbursements \$212,968.65

Cash Balance—December 31, 1968 \$ 93,472.73

Cash Balance Accounted for as Follows:

Guaranty Bank and Trust Company \$ 689.62
Peoples Federal Savings and Loan 14,694.39
First Federal Savings and Loan, Aiken, S. C. 11,901.91
First Federal Savings and Loan, Anderson, S. C. 11,929.95
Security Federal Savings and Loan, Aiken, S. C. 11,901.94
Home Building and Loan Association, Orangeburg, South Carolina 11,909.64
Anderson Savings and Loan, Anderson, S. C. 11,927.93
Pickens Building and Loan, Pickens, S. C. 11,417.35
South Carolina National Bank, Florence, S. C. 7,100.00

Cash Balance Accounted for as Above \$ 93,472.73

(NOTE: Dr. Stokes gave a general review of the Treasurers' Report which is set out in detail herein before.).

Dr. Stokes: I would remind this organization that a functioning organization is supposed to have in reserve a figure that is approximately the annual budget of that organization. And that is about what we are doing with our General Fund. In the permanent Home Fund we now have, this includes the interest of 1968, a total of \$78,450.03.

I might add that the items which were also handled by the business office and which are not considered here from the standpoint of any detail, the AMA-ERF dues, the AMA dues, the County dues and SCALPEL dues.

Gentlemen, this is my report. I want to tell you that the entire State organization has been most cooperative and as Mr. Meadors has mentioned, the number of paid members we have and particularly the state members we have as related to the A.M.A., also, as I tell you each year, I am constantly impressed with the tremendous amount of hard work that each of you is doing. I have confidence in the work of Council. It is a difficult job and is becoming even more difficult. There are many things on the horizon that I think deserve the attention of each of us, and I am sure that you will hear more about them.

It is impossible, of course, for this office to function without the office and the full cooperation of Mr. Meadors. It is a matter of economy for the Association that this works so well and I am very appreciative and grateful for his kind help and for the very fine camaraderie that I have had from council. (Applause).

Dr. Weston: Thank you, Dr. Stokes, for the very fine job that you are doing for all of us.

We will now call on our friend, Dr. Joe Waring, from Charleston, Editor of the Journal.

Dr. Joe Waring, Charleston: Mr. Chairman: This is a brief report and very similar to the reports of the last several years, I am sorry to say. Annually the Editor appears before you and repetitiously complains of the difficulties of being an editor, or should I say, of producing a Journal. Our exhortations and pleas for help from the membership seem to fall flat on your hearing apparatus, natural or artificial, (Laughter), and by and large the editor must keep pushing himself around. Lately this has not been made any easier by our new arrangement for printing. While it is definitely less expensive than the previous one, it has not been entirely satisfactory, and perhaps the situation should be reviewed. Unfortunately, this would involve perhaps some additional expense, and this is not desirable. We hope that the finished product has been reasonably satisfactory.

While this is a matter for the Council, it seems well to consider the fact that your editor is growing no younger, and no more intelligent, and that some day before long a replacement will be necessary. I would ask that you consider this matter and comb your coun-

ties for a possible successor to be recommended to the Council. In the meantime, do not forget that we still need help to carry on in the old way. (Applause).

Dr. Weston: Joe, we are grateful to you for the tremendous job that you are doing.

Now we will ask Dr. Booker, Chairman of Council, if he will come forward and give the report of Council.

Dr. Weston: Dr. Booker.

Dr. John P. Booker, Fourth District:

Mr. President, Mr. Vice President and Members of the House:

Council started the year faced with replacing such stalwarts as George Dean Johnson, Norman Eaddy, Harrison Peeples, and Ben Miller. We were later to lose one member by death, Clay Evatt a great, good, man and long-time servant of medicine and the South Carolina Medical Association. We lost Martin Teague also, who moved from his district. This left Council with John Hawk from the First, Waitus Tanner from the Second, Bill Klauber from the Third, John Gaston from the Fifth, Dessie Gilland from the Sixth, Mike Holmes from the Seventh, Harvey Atwill from the Eighth, and Harold Hope from the Ninth. Joe Cain and Tom Parker, our Delegates, to A.M.A., our beloved Joe Waring, Editor of the Journal of The South Carolina Medical Association, Howard Stokes, our Treasurer, Hal Jameson, President of Blue Shield, Strother Pope, our Secretary, Joel Wyman, President of the Association, Bill Perry, President-Elect, Tucker Weston, Vice President.

You must realize that I was not chosen to lead such men as these, but simply to preside at their meetings, which I was proud to do, and considered it a great honor to sit with them and represent the Fourth District.

In compliance with the rules of the Association which states that Council shall meet within sixty days following the Annual Convention to appoint Committees, Council met in Columbia, July 10, 1969, for that purpose.

The appointment of Committees by the President with the advice and consent of Council rather than by the President of the Association alone was begun during the administration of Julian Price. This has proved satisfactory because better statewide representation is obtained on the Committees and the President is relieved of an onerous task. We would like for you to respond to the questionnaire so that we will have on file members who will serve the Association and their interests.

At this meeting, we were introduced to Title XIX. The Director of the Department of Public Welfare, Dr. Arthur Rivers, met with us, as did Representatives of Travelers Insurance Company, which was to be the intermediary agent. It was at this meeting that many of us began to doubt the ability of the Welfare Department to handle this huge program, because it appeared to us that they had not properly staffed themselves with personnel nor machines to accomplish it. We also got our first chance to be critical of the formulary.

Our grumbling only served to bring to light that some doctors who were appointed to help with the formula had failed to respond and the drug list suffered as a consequence.

Thanks to Ken Aycock, who, as State Health Officer, invited your officers to the Governor's Conference on the Moody Report, at Wampee, on August 14, 1968. We were given, at the meeting, that part of the Moody Report which dealt with the health of the State. None of us had seen a copy prior to the meeting, and consequently, none of us was ready to express ourselves either pro or con when asked to do so by the Lieutenant Governor. The Moody Report was not all bad by any means and many of its aspects if implemented, will help in our effort to supply better medical care for all people. It appeared to us that the investigators had spent too little time in the right places for their report to be really factual. An outraged Willie Hall stated his Mental Health Department had not been consulted at all, yet their expenditure of tax money was second or third of all agencies in the State. Bill McCord, President of the Medical College, stated that the Moody people who came to see him, stayed no longer than a couple hours, yet thought they were able to recommend sweeping changes in the structure of the Medical College and to be critical of certain areas in the operation of the College and also of the Hospital.

The Lieutenant Governor, who had assumed the chair, did prick us, when after hearing us complain that the report might not be completely fair, said, "Doctors, you can't get around the fact that South Carolina leads the nation in infant and maternal mortality and is at or near the top in deaths due to cardiovascular diseases. Something must be done about this." We surely could not argue that point, only question the statistics.

Once upon a time, Council had only one meeting between Conventions and this was a meeting in October. Council has met nearly every month this year, but still the October meeting is the chief meeting, for among other business, we hear the Treasurer's Report and accept a budget for the ensuing year. The Treasurer reported that for the first time in years, the financial affairs of the Association were in such good condition that we were operating in the black on a budget of \$96,208.00.

We added our blessing to the Reubin Bill which would liberalize the Abortion Law.

Rumors were flying thick and fast that the Governor was going to turn Title XIX over to the Health Department to run. In fact, close friends of the Governor were told, by him, that he was going to do this. Your President has a letter from him stating that this was to be done, yet he could not bring himself to see it through. Why? Why is it that he not only did not take Title XIX from the Welfare Department and give it to the Health Department, but apparently said, "A Plague on both your Houses. Now he has had introduced a bill to do away with both depart-

ments and to put them under a seven member board which we no longer have the privilege of naming a member. What brought about this change in his decision? Could it be that he knew we were contemplating some change in the manner of electing the Executive Committee of the State Board of Health, And decided this was the time to do away with it altogether?

Having been informed that three bills were introduced by members of the House which would allow osteopaths greater liberty—in fact, give them all privileges that regular medical doctors enjoy, we asked the chairman of the State Board of Medical Examiners to meet with us in Charleston in order to explore various counter measures. It was decided, in view of the favorable attitude of the Legislature to modify the law governing the osteopaths, and to grant them more liberty, that a Committee should be formed consisting of Joe Cain, as Chairman, Bill Perry, and Harvey Atwill from Council, and Norman Eaddy and Bill McCord, who had been part of the Legislative Committee to investigate Osteopathic Schools in 1967. This special Committee was to meet with a Committee from the State Board of Medical Examiners and plan our fight against the proposed three bills. The Committee then was to meet with a Sub-Committee of the House to which the bills had been referred. When, in their good judgment, it was felt that a compromise had to be arrived at in order to have some control over the osteopaths, they offered to the Legislative Sub-Committee the compromise that you are familiar with. Many of us thought this placed us in a favorable light with the Legislators on the Sub-Committee and we felt confident that the compromise would become law or that there would be no change in the present law if the osteopaths objected. Joe Cain, after getting Council's approval of the compromise, and there were two members who were strongly opposed, insisted that this action must be approved by the House of Delegates. Therefore, a called meeting of the Delegates was set for March 16th. Of the 145 Delegates to the South Carolina Medical Association, only about 45 appeared and a majority of these came determined to give the osteopaths and the members of the Legislature who had agreed to the compromise no quarter.

In spite of favorable action by the Committee, made up of men of known ability and integrity who had long served the South Carolina Medical Association in its legislative struggles with naturopaths and the osteopaths, and who had, year after year, frustrated their efforts for recognition. In spite of approval by the State Board of Medical Examiners—In spite of approval by Council—In spite of the fact that for once many of us thought we doctors appeared to be coming up with something positive, which would give us a better image with the Legislature and the general public—In spite of the advice of Julian Price, Norman Eaddy, Frank Owens and George Dean Johnson, that the Delegates should go along with the recommendations of Council, those Delegates present voted not to support the compromise but to ask the Legislature

to nullify the attempt by the osteopaths to be fully licensed or if licensed, to free the South Carolina Medical Association and the State Board of Medical Examiners of all responsibility for their acts. Yet we are, by law, and have been since 1879, responsible for the health of the people of South Carolina. It was decided that Council's special committee concerning this legislation should be replaced by an ad hoc committee from the House of Delegates. As you know, the three bills have passed the House and are now in the Senate being held in Committee by request of Dr. Frank Owens until we may at this meeting reconsider the action of the special session of the House of Delegates.

A resolution sponsored by the Richland County Medical Society asking Council and House of Delegates to continue the all-out-fight against the osteopaths was tabled in Council yesterday.

A resolution will be presented to the House of Delegates asking that letters of commendation be sent to the Governor, Dr. William McCord, President, Medical College and also a letter addressed to those employees who have, under great stress and intimidation, carried on their duties in the Charleston hospitals. This action was approved by Council.

Mrs. Gazes, the president of the Woman's Auxiliary, and Mrs. Moise, the president-elect, gave an account of the splendid work being done by our Auxiliary.

Several months ago, Dr. Joel Wyman, the President, realized that due to the increasing demands being made upon our Executive Secretary by the increased amount of Association business and with the promise of ever increasing involvement of the Association in federal programs, proposed the employment of a field man or an assistant to our Executive Secretary and a committee was appointed to make a study as to its feasibility.

The committee of five having made the study, reported to Council yesterday. It was realized that a project of this sort would involve an increase in dues, since the total additional expense would amount to approximately \$25,000.00. After considerable discussion in Council, they decided to recommend to the House of Delegates that the annual dues be raised in the amount of \$25.00 per year.

There is no question that our honeymoon with the lawmakers is over. We must now go, hat in hand, and ask that our voice be heard, that our wishes be granted. Why? How is it that our power has fallen so low?

It is that we are practically 100% of one party and the Legislature and Governor, even nearer 100% of the opposition party? It would appear that we are either too active in one party for them to consider us as friends, or not active enough to elect our friends. I don't think it is our political affiliation which has caused our impotence in legislative halls. I think it is because we, as a profession, have not kept pace with the social upheaval in our time. We hollered long and loud and predicted dire calamity

if Social Security were passed. We offered nothing better and now we find Social Security the most popular piece of legislation which has been effected in our generation. We hired a hall and fought Medicare tooth and toe nail. Our poor Auxiliary wore themselves out playing Ronald Reagan's record, and many of us spoke out at every opportunity before anyone who would listen, but we offered nothing better and Medicare and, more recently, Medicaid are parts of our lives whether we like them or not. The public likes and wants them and is going to have them in some form. We have been proved wrong so many times since we decided to become anti-everything that our influence with the public and the Government has declined to the point that we have little or no following at all. It is high time that we doctors developed a positive program for adequate medical and hospital care for all the people, at prices all people here in South Carolina can afford. If we don't do it, someone else will. (Applause).

I wish to report to you that your president, Joel Wyman, has spent about as much time this year doing the work of the Association as he has practicing medicine. There has been hardly a week that he has not been in Columbia or Charleston or somewhere in the State on Association business or representing the Association on a committee. He has worked long and hard and deserves applause of the Association.

I have never been associated with—this is more of that "love-in."—(Laughter), with an organization or group more dedicated to duty than the Council of the South Carolina Medical Association. We have met on more occasions than ever before in the history of the Association. We accepted an invitation to meet at the Medical College which made many of us have to travel the length of the State and many meetings have been called on very short notice, yet our attendance is remarkably close to 100% which reflects the devotion of these men to duty and their interest in the welfare of the Association.

It has been a rare honor for me to serve with this group.

I would also like to express my sincere thanks to the Societies that go to make up the Fourth District, Greenville, Anderson, Pickens and Oconee—for allowing me to serve as Councilor for nine years. I would especially like to thank the Greenville Society, who could have, had they desired, unseated me at any time for the number of their delegates exceeds the total number of delegates of the other three Societies. I would suggest and recommend that their example be followed by other large Societies so that the office of Councilor may be rotated among the Societies.

I wish to express my sincere appreciation to Jack Meadors, our Executive Secretary, upon whom I have leaned during my years on Council and especially this year when Chairman; the going has been difficult at times. He has faithfully and efficiently served Council and this Association for many years and it is hoped that you will see fit to allow him an assistant.

If, in this report, I have seemed to scold you, I have deserved the scolding as much as anybody. I want you to know that I have a deep and abiding affection for you all. Thank you. (Applause and standing ovation).

Dr. Weston: Jake, you see that by that standing vote of applause how much everyone deeply appreciates your dedication and service to the South Carolina Medical Association. We are grateful each and every one of us.

We will now call on our delegates to the A.M.A., and we will ask Dr. Hawk who served as an alternate delegate at one of the meetings, to come forward with his report.

Dr. John C. Hawk, Jr.: Mr. Chairman: This is a report to the Annual Meeting of the House of Delegates of the A.M.A. held in June of last year in San Francisco.

Although I had attended a number of meetings previously, this was my first experience as an officially seated delegate to the A.M.A., taking the place of Dr. Joseph P. Cain, who unfortunately could not be present for the meeting. It was my privilege to be seated with a real veteran of the House, Dr. George Dean Johnson, and I am sorry that he is not here today to give this report or to make comments upon it. He wrote me a few weeks ago that he could not be here today as this is his turn to be at home "tending the store."

A number of others from South Carolina attended the business sessions of the House, including the addresses of Dr. Wilbur to the A.M.A. He gave, two, one his inaugural, and he concluded by stating "As we begin this year of fateful development of the health of our country and its people, let us focus on directing the course of the future." The demands of the MCHR, the Medical Committee for Human Rights, were read to the House. And I think it is worth quoting them in detail, so that we can all see what we are up against from groups of this type:

"The MCHR, recognizing the imperative need to heed the voice of the poor, endorses the list of demands presented by the Poor People's Campaign. We submit that the state of American health is in crisis and that the AMA must turn itself from concerns of its own professional self interest to heed the voice of its real constituency, The American public, the victims of the overwhelming failure of the present health care system.

The Medical Committee for Human Rights in conjunction with the Poor People's Campaign urgently requests that the House of Delegates at this session pass a resolution that would: (1) endorse the Poor People's Campaign objectives in the area of health care and hunger; (2) that they direct Washington lobbyists to engage actively the members of Congress so that the poor people's demands in the area of health care be passed this month, or next, at the latest. To do any less would only confirm in the

minds of the poor people their conviction that this country and this society does not care."

In reporting a tremendous meeting like this, I have reported only a few items that stood out in my mind, which related to actions taken by this Association. It was the first time that I have personally been part of a picketed organization and had to cross picket lines each time I entered or left the hotel. However, I think that I can say without any fear of contradiction that all of us from Charleston area are now experts in crossing picket lines. (That brought much laughter).

Thank you for the privilege of serving you as your delegate for this annual meeting and as alternate delegate to other meetings.

Dr. Weston: Thank you, Dr. Hawk. Dr. Cain, are you ready to give your report? We will now call on our senior delegate, Dr. Joe Cain from Mullins.

Dr. Joseph Cain, Mullins: Mr. President, Members of the House of Delegates, I want to report to you today in our meeting on the Interim Meeting of the American Medical Association which was held in Miami Beach December the first through the fourth. If there is any theme which the reports of Dr. Hawk and myself should bring to you, it should be that of change, particularly in most of the things which we have felt so long in our Association that were unchanged and yet I wonder just how firmly we feel that way because the first thing that I am going to tell you about is a resolution which appeared at the end of the meeting, and it was such an astounding resolution that you would think there would be a lot of opposition. Of course, this resolution had been, supposedly, discussed and properly posed in reference committees, but because of the type of resolution that it was, you might expect more talk about it when it hits the floor. That resolution is this:

"Whereas, the Medicaid Program and the Social Security Act is one program that descends its benefit without discrimination to all those unable to pay for their health care.

Therefore, be it resolved that the AMA continue to strongly support the Medicaid Program and urge the members of Congress to give the program their full support."

There was more to it than that, but that is the resolution. When it hit the floor. Dr. Whitman from Kentucky, got up and objected some to it, nobody took it up, and Dr. Parker and I stood there in shock and we didn't say anything either. It was the full consensus of the meeting that that was right. Now how long ago was it that we were fighting this principle tooth and nail? And one thing that I would like for us to think about during this entire report is how many of us feel that way now? We make all sorts of resolutions and statements about being against these things, and yet the only thing we are concerned about is whether Blue Shield is going to pay us our medical service fees for these people, or Medicaid, or whoever it is. In other words, we are more interested now in seeing that the mechanics of getting our money

is paramount and not the principle behind it. So, if you feel that way, just think that maybe you have changed. If you don't feel that way, well, just be thankful you haven't changed. I am sure you will find some people thinking like that, even your neighbors. Just what is happening to American Medicine, is hard to tell, but through this whole report, through the whole convention we had last year, there is this element of change. So, I would like to go ahead now. The first thing that I would like to say, we go to the President's report. In his address, he told the House that perhaps the greatest problem is that in many ways, we in America have tried too hard and succeeded too well. We have progressed so far in so many areas, that our people are impatient with the realities of human imperfection.

Dr. Wilbur listed five areas to which he believes the medical profession should give its greatest attention:

1. Making high-quality health care available for everyone in America at as reasonable a cost as possible.

2. Putting a rein on costs by avoiding hospitalizing any patient unless absolutely necessary; reducing the length of hospital stay to the essential minimum; using extended care facilities, nursing homes and home care services more often; stimulating prepayment mechanisms on a voluntary basis; supporting the principle of income tax credits for health insurance; keeping physicians' charges on a basis of usual, customary and reasonable fees, with self-discipline and peer review; and encouraging wider use of reliable automated laboratory procedures, passing the cost benefits on to patients.

3. Developing more reasonable and more realistic expectations by the public.

4. Unifying the medical profession and maintaining constructive liaison with other groups.

5. Planning for an orderly and enhanced future. "We must," he said, "increasingly depend on the Board of Trustees to lead in planning and development for the future . . . As an association, this is our greatest responsibility. The Board must increasingly be an informed board of strategy that looks ahead and advises the profession, the government and the public regarding health measures."

The president closed his report by saying, "We are immersed in an epoch of change. We cannot hope to emerge from it as respected leaders unless we guide the course of change . . . Our guidance in helping change all elements of society that affect the people's health in an orderly, balanced sequence is the price of our continued esteem as a profession and an organization."

Ninety-four items of business were brought to the attention of the House, including 22 reports from the Board of Trustees, and about 62 resolutions.

Now there were many actions taken at this meeting which are of very definite interest to our Association. We are having the same problems that these have

and that were discussed here, and I might say that even though we are having problems, that we don't have the problems that some people have in other states, and I would hope that the leaders of our Association in the future will guide us along the path which will keep us from having some of these problems. Some people have a terrific amount of internal friction, not only within their society, but a terrific amount of friction within the state and the people within the state. And we are beginning to get a touch of it ourselves. We find that our image has fallen down, way down and particularly in our State Legislature. This isn't a more recent development, but it shows not only the change in medicine, but the change in the way that people are feeling about the doctor. We have got to think very seriously about that, because we are finding ourself now in the position that many medical associations over the country have found themselves in in times past. They have not had nearly the rapport with their State Legislatures that we have had. They have had a lot of problems and we allow this to get out of hand, our problems, as I see it are just starting.

Now, particularly concerning some of the things that I know we are interested in, I want to further talk about this discrimination clause. It was passed at the annual meeting. However, the By-Laws of the Constitution were amended at this meeting. And you know when you have an amendment in the By-Laws, it takes two-thirds of the membership after it is laid on the table before it. Council on Constitution and By-Laws presented wording for this amendment which was passed, and it says:

Membership in the American Medical Association or in any of its constituent associations shall not be denied or abridged on account of color, race, creed, religion or ethnic origin.

Then it has an amendment which authorizes the Judicial Council, if the Judicial Council determines that the allegations, and these allegations, of course, refer to discrimination, those that have been brought by somebody.

"... are indeed true, it shall admonish, censure or, in the event of repeated violations, recommend to the House of Delegates that the state association involved be declared to be no longer a constituent member of the American Medical Association."

Now that represents terrific change. We have been taught, we have been brought up, to think that the County Medical Association is the basis for membership in the State Association, which is necessary for membership in any or in the AMA. And that all the censorship should come from the County Association up. Here we have the first instance in the entire one hundred year history of the Medical Association, where the National body has undertaken to admonish and even restrain a State Association from practice. That is a terrific change. I hope that it is not symbolic of things to come.

Other action at this convention was on osteopathy.

The Board of Trustees and the President presented to this convention what I thought was an amazing document. However, it passed. I will read you the details of it in a little while. I think that you would have been proud of your delegation because we fought it in the reference committee, and we fought it on the floor and we tried to tell it like we thought it was. In fact, how strongly we told it was a source of not exactly embarrassment, but a little chagrin when this committee we are talking about met with the Sub-Committee of State Legislation of Osteopaths. They told me that they had a tape recording of what I said at the AMA and that they really weren't that bad. We didn't retract our statements, but it was embarrassing to have that brought home to you. I don't know how they ever got a tape recording of what we said. But they had a tape recording of all that went on. That is, concerning the osteopaths. This report goes something like this, this is the one that was passed:

To "assure the provision of the best possible health care to the American people; make available to students and graduates in osteopathy, education of the same high standards as prevail in undergraduate, graduate and continuing educational programs in medicine; provide avenues whereby qualified osteopaths may be assimilated into the mainstream of medicine."

To achieve those objectives, the AMA recommends that each school of osteopathy improve its teaching program by strengthening its faculty and improving its facilities and resources; invites schools of osteopathy and their accrediting agencies to consult with the AMA and the Association of American Medical Colleges; suggests that accredited hospitals may accept qualified osteopaths on medical staffs; suggests that medical specialty boards may accept osteopaths for examination if they have completed AMA-approved internships and residency programs and have met other regular requirements; requests that as specialty boards declare intent to permit examination of osteopathic graduates, appropriate AMA-approved residency programs be opened to qualified osteopathic graduates; suggests opening AMA-approved internships to qualified osteopathic graduates; recommends that determination of qualification be made at the level of the medical staff, the county medical society or the review committees and boards having appropriate jurisdiction; and suggests that AMA, state and county societies and other affected organizations "may proceed to make such constitution and by law changes as are necessary to implement the foregoing."

The House also "suggests that each county and state medical society may accept qualified osteopaths as active members and thereby provide for their membership in the American Medical Association" and instructed the Council on Constitution and Bylaws to prepare "appropriate Bylaw amendments so that qualified Doctors of Osteopathy may be admitted to full active membership" in the AMA.

Now, Gentlemen, that is a right far-reaching statement. And to tell you that it certainly screwed up

the works as far as we are concerned in South Carolina, is putting it mildly. One osteopath has already been taken into the Kentucky Medical Association. Now I do not know of other osteopaths that have been taken in, but we will probably have a more full report on that next month when we meet in New York. However, these things were passed. The only thing that wasn't passed and which will require a constitutional change, and as such, will be brought up again in June, is the last part which says: "that osteopaths may become members of the American Medical Association." That has not passed yet. But, it has passed the first reading, and the Council on Constitution and By Laws has been instructed to bring in the Bylaws change so that it may be effective and it will be voted on in June, and this House requires two-thirds and your delegation, of course, is going to vote against it. Whether we will have a sufficient number, I do not know. That is the situation, and that is another change.

Another thing that we were interested in, I am sure, and about which we get questions quite often, is organ transplants.

The House adopted a statement on heart transplantation which makes these five points:

1. The preservation of good medical practice demands that the evolution of therapy be orderly. "The staff of a hospital or medical center planning to initiate such a program should have: (1) adequate background in animal research so that experience is gained as to the problems, potentials and limitations of cardiac transplantation; (2) experience in immunosuppressive therapy and an adequate source of antilymphocyte globulin of known quality; (3) a protocol of clinical research adequate to follow and evaluate the course of the patient."

2. Due regard for the welfare and safety of each individual patient is paramount.

3. Heart transplantation has brought certain medical, ethical and legal questions into critical focus. "Paramount among them is the determination of death. The right of the prospective donor to the best possible medical care—a right which his potential role as organ donor must not be allowed to abrogate—must remain sacred. The growing ability of medical science to maintain some form of biological function for prolonged periods adds to the difficulty of defining the point of irreversible dissolution.

"The cause of death must be evident and of an irreversible type. The fact of death must be established by adequate, current and acceptable scientific evidence in the opinion of the physicians making the determination. The determination of death in organ donors must be made by no less than two physicians not associated with the surgical team performing the transplant."

4. The potential for heart transplantation, whatever that may prove to be by subsequent clinical experience, will be "severely limited by the shortage of potential organ donors . . . Basic research into the causes of

heart disease and of hypertensive vascular disease is . . . of vital importance, since the only ultimate solution to the problem of heart disease lies in its prevention."

5. "Human heart transplantation has been accompanied from the outset by a degree of public awareness and attention almost without parallel in medicine . . . It is imperative, therefore, that the public be made fully aware of the potentialities and limitations of heart transplantation as those are currently understood and as that understanding is modified by subsequent experience . . . Only by preserving public confidence in the judgment of the physician, can the orderly progress of medicine be maintained."

Amazing to me, because I was still naive enough to think that if, when a man is dead, his heart stopped beating, and I found that in these heart transplants, you don't want that thing to happen. You want to get him when his brain stops functioning and when he is dead from other tests, other than tests of stoppage of his heart. I mean, that is just the way I thought. I still don't know how to tell when a man is dead or not, if you can't listen to his heart and not hear it beating, (Laughter). We brought that up at the meeting and they started to define "death" and we got into such a controversy about it that we decided to just leave that out. (Laughter). We tried to make some safeguards that said you have got to have two or three doctors, one who presumably is a neurologist who can take an encephalogram to tell you whether his brain wave is waving, or not, and when that happens, well, then he is dead. It also had a lot of stuff in there about dilated pupils, and decreasing blood pressure, et cetera, and this fellow who is the Dean of the School of Medicine over there in California, he got up and he said, "You know, this resolution ought not to pass." He said, "I can see myself after a hard night before, partying until about 3 A.M., and my pupils dilated and I am lying in bed, my blood pressure has dropped from about 140 to 120, and here comes the transplant team." (Much Laughter).

One of the other things which is, of course, of interest to us, and has been indicated in these resolutions this morning, is advertising promotion of new Blue Shield programs providing broader benefits might be subject to misinterpretation by the public. They are talking in particular about "paid-in full contracts" here that Blue Shield plans are getting into.

The House called on "all voluntary health insurance organizations to offer re-instatement of all contracts which were cancelled or converted because the insured individual was over age 65. You know a lot of insurance companies, the minute you get 65, will cancel your contract. They figure Medicare is going to take over. Well, of course, Medicare doesn't take over in every case and in a lot of cases, it is not adequate. But, this has been the custom in the insurance industry. This resolution is proposed to help in that.

Then, the House adopted the resolution introduced by the Council on Medical Education concerning "Special Requirements for Residency Training in Family Practice" and resolved that the AMA "affirm the importance of providing appropriate recognition for family physicians through approval of a primary specialty board for family practice, and that the Council on Medical Education be encouraged to continue its efforts with the American Academy of General Practice and the AMA Section on General Practice to achieve this goal." In our meetings, time and time again, we have wanted more emphasis on Family Practice. We want Family Practice to become a specialty within itself and the General Practitioner has been working for years to have a Board of Family Practice. There have been over the years many stumbling blocks, but at this meeting, the final stumbling block was removed, and a Family Practice Board is well on its way. I asked Halsted Stone a minute ago, I said you sent us a telegram wanting us to pass this, we passed it and sent you a letter, and we didn't hear from you anymore. He said, "Well, you did what we told you and you did all right." (Laughter). I want to also say that this program is being seriously considered in the curriculum of our Medical College and the only thing that is holding us back right now is trying to find a man who can really head up this department and put it over. Professors in general practice are hard to find, because of course, there never have been any before.

Gentlemen, then next we have this thing concerning the nurses and I think this is real interesting because you know we are having trouble with a shortage of nurses, and not only do we have trouble with the shortage of nurses, but we have trouble with philosophy of the nurses that think they are going to take over the doctor's job and that they don't want to be nurses anymore, but they want to be something else. They want to have a recognition all their own, and I think all of us realize that that is particularly prevalent in our own state of South Carolina, and several resolutions from time to time have come to this House concerning what we should do about it.

In regard to nurses, the AMA House resolved that the "state and county medical societies be encouraged to study the problems relating to nursing education and to seek at the local level all available sources of financing support for hospital nursing schools" and that the AMA take appropriate action in consultation with professional nurses' associations and the American Hospital Association to encourage increasing enrollment in diploma schools."

The old type diploma school, where we taught our nurse how to nurse, and we gave them a diploma and an R. N., and now these other things, the baccalaureate schools, where they go and learn how to get a degree, and operate the hospital and tell the diploma girls what to do, I think it should be the other way around, but that is our situation at the present time.

However, Gentlemen, this thing could go on and on,

and I know we have got a special order and there is only one more point I want to make and that is, a little bit more about the SAMA business. I think that as an Association, we should follow the House's admonition to connect ourselves with the SAMA Movement. It is the Student American Medical Association, because the things that they hear, their needs, and the type of thinking that they are doing now, I think it is foreign to the way we think. And if we think that there is any good in the way we are doing our job, and what we are doing, we certainly should not miss any opportunity that we have to talk to these young fellows, particularly down at the Medical College and try to cooperate with them and try to get them to think what we think is important. So, that ends this report, except for this one thing, I want to thank the House of Delegates for letting me be your delegate for eight years, and my term runs until the end of this December, and I will go to the June and November meeting, and then I think that I have a right to ask to be excused. Thank you very much. (Applause and standing ovation).

Dr. Weston: Joe, we appreciate very much the tremendous job you have done and you were talking about the students and I believe that we have some from the Medical College in the back of the room. I would like for them to stand, if they would. (Students stood and received round of applause).

We are mighty happy to have you with us.

I will now turn the microphone back over to the President.

Dr. Joel Wyman: Thank you, Dr. Weston. You did a good job and all you officers. These reports by your officers will be referred to the committee, reports of council and officers, with the exception of Dr. Booker's report on recommendation of increase in dues which has to be referred to the Committee on Amendments to the Constitution and By-Laws.

Dr. John P. Booker, Oconee, (Recognized): Mr. Chairman this is a Resolution on Solicitation and Commercial Advertising of a Medical Specialty by Lay Corporations in AMA Publications.

"Whereas: The AMA Board of Trustees voted last fall to open all AMA publications to solicitation and commercial advertising of a medical specialty (pathology) to lay corporations, and

Whereas: physicians, by long tradition, are forbidden any activities characterized by self-laudation

and solicitation, both of which are essential to commercial advertising, and

Whereas: this Trustee policy encourages the practice of medicine by lay corporations, and promotes solicitation, in violation of all codes of medical ethics, and

Whereas: this Trustee policy, adopted without consulting the House of Delegates, will set a precedent for regional, state and other medical journals, will spread to other fields of medicine and will lower standards of patient care.

Therefore: be it resolved, by the South Carolina Society of Pathologists, in ordinary session assembled May 2, 1969, that this Society

(1) reaffirms medicine's traditional opposition to the practice of medicine by lay corporations, and to solicitation and to commercial advertising of the practice of medicine, and

(2) respectfully requests Council to the South Carolina Medical Association to recommend to the House of Delegates of the South Carolina Medical Association that they oppose this new AMA Trustee policy, and

(3) requests the House of Delegates to the South Carolina Medical Association to call on the South Carolina Delegation to AMA to reverse this Trustee policy at the July AMA Convention in New York City.

Respectfully submitted,

E. DuBose Dent, Jr., M.D., Pathologist

President, South Carolina Society of Pathologists
May 2, 1969.

Dr. Edward F. Parker, Charleston (Recognized): I would like to move that we go into Executive Session.

The Chair: Are you making that in the form of a motion?

Dr. Parker: Yes sir.

The Chair: You have heard the motion that we go into Executive Session. All in favor, say "aye." All opposed, "no." The "ayes" have it.

Now, unfortunately this means only those who are members, and delegates and alternates may remain. All other individuals must leave. (short period for those others to leave).

At the conclusion of the Executive Session on Monday, May 12, 1969, the meeting of the House of Delegates was adjourned until 9:30 A.M. for Tuesday, May 13, 1969.

MEETING ADJOURNED.

(An index to these minutes will follow the second installment)

MINUTES OF THE ANNUAL MEETING OF THE BLUE SHIELD CORPORATION

Ocean Forest Hotel

Myrtle Beach, S. C.

Monday, May 12, 1969

J. H. JAMESON, M.D., Presiding

Dr. Hal Jameson: Mr. President, and Members of the Cooperative Party of Blue Shield:

Doctors founded the Blue Shield movement 40 years ago, and under the guidance of the medical profession, it has grown to become the largest single source of payment in private practice today. Blue Shield is now mature and strong in a dual role; as

the prepayment agency for the public, and as a trustee for all physicians.

In this time of immense economic and social pressures, Blue Shield has emerged as the only private agency created by doctors to demonstrate that a free medical profession is best able to meet the needs of the public. By continually upgrading

coverage from the old, inadequate levels of the lowest fee schedules, Blue Shield has closed a big part of the gap in financing private medical care for all economic classes of people.

Critics of the medical profession assert that physicians are charging exorbitant fees. But the members of the South Carolina Medical Association, along with their Blue Shield plan, have proved that it isn't so. At the end of 1968, for example, the United States Department of Labor announced that medical care costs had gone up 6.2 per cent, and that this played a key role in a 4.7 per cent increase in the Consumer Price Index. Your Blue Shield records disclose, however that physicians' fees in South Carolina rose no more in 1968 than did the cost of living. Thus, physicians in this state generally endured inflation in the economy, without contributing to its escalation.

My report on the stewardship of Blue Shield of South Carolina during the year 1968 is a report on the best-year of operations in the plan's history. Blue Shield payments to doctors amounted to more than \$4.8 million, more than in any preceding year. The Plan experienced a small net operating loss, but this was a calculated effort to reduce somewhat the unallocated surplus figure which the Board felt had reached a disproportionate level.

The dominant influence upon Blue Shield during the year was resurgent public confidence in the medical prepayment system. The Plan achieved its greatest membership growth in more than a decade.

Throughout the United States, Puerto Rico and Canada, Blue Shield membership climbed more than 2,300,000, despite the loss of almost 740,000 members in British Columbia who were lost into the Canadian socialization of medicine. Total Blue Shield membership in this hemisphere reached nearly 65,000,000 with a growth rate of 3.7 per cent.

Blue Shield of South Carolina did much better, with a growth rate of 11.2 per cent in contracts and 11.3 per cent in membership. The 1968 gain of 35,571 members brought the year-end membership to 358,267.

Among the 21 Plans in the same size category (100,000 to 500,000 members), only three were able to match the South Carolina growth rate. The Regional average was barely more than one-half as good.

Blue Shield of South Carolina attributes its excellent rate of enrollment to the emphasis on higher fee schedules and payment of a larger share of the physicians' bills. And, in turn, we regard it as further evidence of higher public confidence in prepaid, private medical care.

Along with the implementation of higher benefit levels for thousands of members, and the enrollment of tens of thousands of new members, your Blue Shield in 1968 conducted intensive studies and consultations with the State Insurance Department,

in the planning for even broader health care coverage in South Carolina in 1969 and 1970. The long awaited usual and customary fee program has become a reality, along with our own new major medical contract.

During 1968, the Social Security Administration renewed the contract under which Blue Shield of South Carolina administers Part B of Medicare. And the Plan made payment of more than \$8.7 million for medical services to those over 65.

The Medicare claims review department was strengthened and improved during the year, and Blue Shield staff extended more assistance to doctors in the field of utilization review. The lag-time in processing of Part B claims was reduced, and most Medicare payments to physicians were made within 15 days of the receipt of claims.

Higher volume, bringing about an increased use of electronic data processing, resulted in better identification of usual, customary and prevailing fees. Only one-half of one per cent of Part B claims were denied, and then only after review by the Medical Review Committee. As your Part B carrier, Blue Shield paid nearly 180,000 claims in 1968 and, in 97 per cent of those claims, the physician's full actual charge was allowed as the reasonable charge.

Appended to my report are the Blue Shield balance sheet, statistical summaries of operations, a breakdown of participating physicians, and a tabulation of your Medicare payments.

Again this year, as last, I desire to express my appreciation to both the lay and professional members of the Board of Directors of Blue Shield of South Carolina, and to the Blue Shield staff, for the excellent work they continue to do. And on behalf of more than one-half million South Carolinians served by your Blue Shield plan, I desire to express our appreciation to the South Carolina Medical Association for its increased participation and support. Thank you. (Applause).

Nominations for directors followed.

In the place of Mr. W. Palmer Dillard, Walter Cox, Dean of Students at Clemson University was nominated.

Dr. J. Hal Jameson was nominated to succeed himself.

Dr. Louis P. Jervey to succeed himself.

Dr. A. Izard Josey to succeed himself.

Dr. Samuel G. Lowe, Jr. to succeed himself.

Mr. Robert Graham from Sumter to replace Mr. Capers L. Peterson.

These were all elected.

Dr. Tucker Weston: Motion that some method be found to pay nurse anaesthetists their fees for surgical cases. Was lost after considerable discussion.

Dr. Louis B. Jenkins, Charleston: Mr. President, the Charleston County Medical Society proposed the

(Continued on page 353)



Dr. Julian C. Adams has returned to Columbia and is associated in practice at 2005 Hampton Street with **Dr. Joseph W. Taber Jr.** Their practice is limited to referrals for neurology and electroencephalography. A native of Columbia, Dr. Adams was graduated from the University of South Carolina and the Medical University of South Carolina. He served his internship at the University of Alabama Hospitals and was resident and chief resident in Neurology at the Medical University of S. C. Before returning to Columbia, Dr. Adams was chief of the section of Neurology at March Air Force Base Hospital. While in California he was associated with Loma Linda University Medical School as a Clinical Instructor in Neurology. **Dr. William Edward Bomar Jr.** of Greenville has been elected to fellowship in the American Academy of Pediatrics. **Dr. Harry T. Zankel** of the Columbia Veterans Administration Hospital showed an exhibit at the annual AMA meeting.

Dr. Fred E. Gilliard has begun general practice of medicine in Saluda. He is in partnership with **Dr. Robert Lee Sawyer** with offices located on Butler Street. He was graduated from the University of Georgia and the Medical College of Georgia. **Dr. Henry Joseph Fischl** has joined the medical staff of the Finger Clinic-Hospital in Marion as head of ob-gyn. **Dr. Joseph A. Johnson**, who practiced general medicine in Andrews from 1941-43, has returned to the community to take over the office of the late **Dr. W. E. Witley**. **Dr. Otis Hill**, Laurens physician, was recently honored by the Baptist Brotherhood of South Carolina. **Dr. W. Pettigrew Clare** has announced the opening of his

office for the practice of internal medicine at 51-C Montague St., Charleston. **Dr. Harold R. Hoke**, obstetrician-gynecologist, has moved to Camden and begun practice at the Burndale Medical Center. **Dr. Albert F. Aiken** has announced the opening of his office for the practice of neurology at 65 Gadsden St., Charleston.

Dr. Albert Thomas of West Columbia has been appointed part-time medical director of Planned Parenthood of Richland and Lexington Counties. **Dr. John C. Hawk Jr.** has announced the association of **Dr. J. T. Richards** in the practice of general surgery at 65 Gadsden Street, Charleston.

Dr. J. L. Bozard has accepted a position at the Greenville General Hospital. He has begun work in the emergency room of the hospital. **Dr. Richard A. Mann** has joined the surgical staff of Newberry County Hospital. He was graduated from Newberry College and the Medical University of S. C. **Dr. Walter C. Bishop Jr.** has begun the practice of obstetrics and gynecology in partnership with **Dr. J. Furman Daniel** at Academy and Spring Sts. in Greenwood. **Dr. John Neyle Bennett**, a native of Walterboro, has opened his office at Sunset Medical Court, West Columbia, for the practice of obstetrics and gynecology. **Dr. E. Dubose Dent**, Columbia pathologist, has accepted appointment to the staffs of two Los Angeles area hospitals. **Dr. James Hentz** has returned to Anderson to be associated with his father, **Dr. E. O. Hentz** in the practice of general and thoracic surgery. He is a graduate of the Medical University of S. C. and spent five years in surgical training at Greenville General Hospital. **Dr. William B. Hilbun** has joined the staff of William S. Hall Psychiatric Institute in Columbia.

Dr. Hilbun recently finished training in child psychiatry and is a pediatrician. **Dr. Abner H. Levkoff**, associate professor of pediatrics and director of newborn serv-

ices at the Medical University of S. C., has been appointed to the Clinical Program Advisory Committee of the National Foundation-March of Dimes.

New Members of SCMA

Dr. Edmond W. Camp, III
1224 W. Palmetto St.
Florence
Dr. R. Layton McCurdy
80 Barre St.
Charleston

Dr. Phanor L. Perot, Jr.
80 Barre St.
Charleston
Dr. Raymond L. Thomas
McLeod Infirmary
Florence

MEETINGS

The William S. Hall Psychiatric Institute in Columbia, as part of its Continuing Education program for 1969-70, will sponsor a session on Human Sexuality October 29, 30. The symposium for practicing physicians will include discussion of psychosexual growth, development and aberrations—modes of expression and management.

The Southern Medical Assn. will hold its 63rd Annual Meeting November 10-13 in Atlanta, Georgia. For more information write Southern Medical Assn., 2601 Highland Avenue, Birmingham, Ala. 35205.

The American College of Physicians is sponsoring a regional scientific meeting for specialists in internal medicine in the Southern states, September 19-21 in Point Clear, Alabama.

A postgraduate course in otolaryngology for the family practitioner is being sponsored Nov. 7-8 at the Sheraton Four Ambassadors Hotel in Miami. The course is being sponsored by the University of Miami School of Medicine.

The 9th Annual Charlotte Postgraduate Seminar will be held at Presbyterian Hospital Auditorium, October 1-2.

News

A gift of \$300,000 from The Peace Fund, in memory of the late Roger Craft Peace, Greenville publisher and civic and community leader, has been presented to the Greenville Hospital System toward construction of a new hospital for rehabilitative medicine, which is planned and designed to serve regional needs.

The 50 bed modern hospital will be constructed on the Community Health Center site on Grove Road. A grant from the Appalachian Regional Commission will help finance construction costs of the \$2,250,000 structure, which will incorporate complete services for the care of patients requiring rehabilitative medicine.

Construction on the Roger C. Peace Institute is scheduled to begin in late October. The structure is expected to be completed and in use by the middle of 1972.

Baker Memorial Hospital, Charleston, S. C. 29401, has several used hospital beds, dressers, bedside tables and overbed tables for sale. Articles in good condition. Write John Holt, administrator.

EXCERPTS FROM RECENT ACTS OF THE LEGISLATURE

An Act Authorizing The Gift Or Part of A Human Body After Death For Specified Purposes And To Repeal Act No 96 of 1963.

SECTION 2. (a) Any individual of sound mind and eighteen years of age or more may give all or any part of his body for any purposes specified in Section 3, the gift to take effect upon death.

(b) Any of the following persons, in order of priority stated, when persons in prior classes are not available at the time of death, and in the absence of actual notice of contrary indications by the decedent, or actual notice of opposition by a member of the same or a prior class, may give all or any part of the decedent's body for any purposes specified in Section 3:

- (1) the spouse,
- (2) an adult son or daughter,
- (3) either parent,
- (4) an adult brother or sister,
- (5) a guardian of the person of the decedent at the time of his death,

SECTION 3. The following persons may become donees of gifts of bodies or parts thereof for the purposes stated:

(1) any hospital, surgeon, or physician, for medical or dental education, research, advancement of medical or dental science, therapy or transplantation; or

(2) any accredited medical or dental school, college or university for education, research, advancement of medical or dental science or therapy; or

(3) any bank or storage facility for medical or dental education, research, advancement of medical or dental science, therapy or transplantation; or

(4) any specified individual for therapy or transplantation needed by him.

SECTION 4. (a) A gift of all or part of the body under Section 2 (a) may be made by will.

(b) A gift of all or part of the body under Section 2 (a) may also be made by document other than a will.

SECTION 6. (a) If the will, card or other document or executed copy thereof, has been delivered to a specified donee, the donor may amend or revoke the gift.

SECTION 7. (a) The donee may accept or reject the gift.

(a) The time of death shall be determined by a physician who attends the donor at his death, or, if none, the physician who certifies the death. This physician shall not participate in the procedures for removing or transplanting a part.

An Act To Amend The Code Of Laws Of South Carolina, 1962, By Adding Section 11-157, To Authorize Married Minors Or Their Spouses To Give Legal Consent To Diagnostic And Therapeutic Procedures.

SECTION 1. The Code of Laws of South Carolina, 1962, is amended by adding Section 11-157, as follows:

"Section 11-157. The consent of a married minor or, if a married minor be unable to give consent by reason of physical disability, then the consent of the spouse of the married minor to the performance by any licensed medical, surgical or dental practitioners, or any hospital, or their agents or employees, of any lawful diagnostic, therapeutic surgical or post-mortem procedure upon or in respect to such minor or any minor child of such minor, shall, notwithstanding the minority of such minor, be valid and legally effective for all purposes and shall be binding upon such minor, his parents, spouse, heirs, executors and administrators as effectively as if such minor or the spouse of such minor were twenty-one years of age."

POSITION AVAILABLE

**Emergency Room Physician:
Maximum Starting Salary \$30,000
and Liberal Benefits**

Established 4-Man Emergency Department

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Columbia, South Carolina 29204**

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SOMETHING NEW ON TOP

Additional protection against the expenses of non-occupational illnesses or injuries is now available for your patients enrolled in Blue Cross - Blue Shield of South Carolina. It comes in a new Major Medical Expense contract, recently approved by the State Insurance Department, and offered to subscribers in amounts of \$5,000 and \$10,000, or \$10,000 and \$20,000.

Several of the largest Blue Cross - Blue Shield groups are already enrolled in the new major medical program, and their coverage is already in effect. The coverage includes out-of-hospital drugs, therapy, nursing, ambulance service and prosthetics, as well as more hospital and physicians services supplementing the basic Blue Cross - Blue Shield benefits.



Blue Cross - Blue Shield
OF SOUTH CAROLINA

THE SOUTHEASTERN REGIONAL MEDICAL LIBRARY

Services For Health Practitioners

WARREN A. SAWYER, B.S., M.S.L.S.*

"To study the phenomena of disease without books is to sail an uncharted sea, while to study books without patients is not to go to sea at all."

—Sir William Osler

In the past few years health practitioners have become increasingly aware of the need for continuing education programs. The exponential growth of the literature, the development of new techniques, and the interdisciplinary cooperation and sharing of knowledge among the various health sciences have amplified this need. While the traditional methods of keeping the practitioner abreast of current thinking in his field have been supplemented by televised courses and other audiovisual teaching programs, a familiarity with and expeditious use of the literature is of great value to the clinician.¹ In a recent survey of North Carolina physicians, Cavanagh² found that the majority considered the "medical journal" to be the most valuable aid in their own continuing education.

To provide prompt access to library materials for any health researcher, practitioner, or student of the health sciences, regardless of geographic location, the National Library of Medicine has developed a regional medical library program.³ This program is responsible for the establishment of coordinated and cooperative library service by designated libraries within established regions.

Emory University's application for a regional medical library to serve the Southeastern United States (Alabama, Florida, Georgia, Mississippi, Puerto Rico, South Carolina, and Tennessee) has been approved by the National Library

of Medicine. Emory will serve as the Southeastern Regional Medical Library and will administrate and coordinate a regional library program to be developed by Emory and the following libraries, which will be known as Resource Libraries:

Medical College of Georgia Library
Medical University of South Carolina Library
Meharry Medical College Library
University of Alabama Medical Center Library
University of Florida Health Center Library
University of Miami School of Medicine Library
University of Mississippi Medical Library
University of Puerto Rico Medical Sciences Campus Library
University of South Florida College of Medicine Library
University of Tennessee Medical Center Library
Vanderbilt University Medical Center Library

The total resources of all of the above libraries are in excess of 700,000 volumes.

Proposed services include the following:

1. Interlibrary Loans. Loans of original material and free photocopies will be provided for qualified users in South Carolina as well as the rest of the region. All requests should be forwarded on standard A. L. A. interlibrary loan forms which are available at most public and larger hospital libraries. Individuals without access to libraries may submit requests by letter. These requests will be filled by the Medical University of South Carolina Library or an interlibrary

*Director of Libraries, Medical University of South Carolina, Charleston, South Carolina.

loan request will be prepared and forwarded to the Regional Library. Items should be verified to reduce the chance of an error in the citation.

2. Reference Services. MEDLARS (Medical Literature Analysis and Retrieval System) searches will be provided for the region by the MEDLARS Center at the University of Alabama Medical Center. Other reference services will include answers to questions of fact and the preparation of brief lists of references.
3. Educational Services. Instruction to potential users concerning the functions and services of the Regional Medical Library Program will be made available. Educational programs will be provided for trained biomedical librarians as well as for untrained or inadequately trained personnel in small hospital libraries. Advisory services will be provided as required.

Present planning calls for the implementation of the Interlibrary Loan program and Reference Service Program by the fall of 1969, at which time newsletters and news releases will be distributed.

In the interim, the Medical University of South Carolina Library welcomes requests for library materials from all qualified health personnel in South Carolina, and is anxious to provide basic reference services to these personnel on demand.

The integration of the Southeastern Regional Medical Library Program with the continuing education programs developed by the South Carolina Regional Medical Program relating to heart disease, cancer, and stroke should assure adequate information services to health workers throughout the State of South Carolina. These programs will strengthen services not only in metropolitan areas but in rural parts of the State as well.

Summary

Emory University has established a Regional Medical Library for the southeast. The Medical University of South Carolina is a Resource Library within this cooperative system. Health practitioners in the State of South Carolina will have access to more than 700,000 volumes in the health sciences through the Resource Library.

REFERENCES

1. West, K. M.: The medical school and continuing education, *Clin Anesth* 1:112, 1966.
2. Cavanagh, G. S. T.: A medical library extension service: a feasibility study, *North Carolina Med J* 29:247, June 1968.
3. Wilson, M. P., Douglass, C. D. and KeFauver, D. F.: Extramural programs of the National Library of Medicine: program objectives and present status, *Bull Med Libr Assn* 54:301, 1966.

BLUE SHIELD MINUTES

(Continued from page 347)

following amendment to the By-Laws of Blue Shield of South Carolina:

That Article II, Section 2, should be amended by adding at the end of the paragraph, that a Director may serve not more than three (3) consecutive terms of three (3) years. This resolution was passed.

Dr. Jameson: There is one other change in the Bylaws which the Board wishes to submit which involves the change of one word. That is in Article III; Section 1 under Board of Directors, paragraph

five, the word "President" will be deleted and "Chairman of the Board" submitted where it reads, "at least two elected members of the board in addition to the," it now reads Chairman of the Board of Blue Shield, that has been changed, to be a member ex-officio.

This was adopted.

A discussion of the new Physician's Participating Agreement was given by Dr. Hawk and Dr. Joseph Cain. No action was taken.

DEATHS

Dr. Charles H. Andrews

Dr. Charles H. Andrews Sr., 76, oldest practicing physician in Sumter County, died July 25, 1969 in his home.

Born in Sumter County, he was graduated from the Medical College of South Carolina; studied surgery at the University of New York and interned in Washington, D. C. He was a member of the American Medical Association, and the Sumter-Clarendon Medical Society.

Dr. William Schulze

Dr. William Schulze of Lake Circle Drive, Paris Mountain, died July 3.

Born in Monroe, La., he received his B.S. degree from the University of Richmond and his medical degree from the Duke University School of Medicine.

He was a veteran of World War II. As a Lieutenant Colonel in England, he was appointed chief of the medical service of

the newly activated 107th General Hospital. He served as chief of the Medical Service of the Finney General Hospital, Thomasville, Ga., until 1946 when he entered private medical practice in Greenville.

Dr. Schulze was a member of the American Medical Association, South Carolina Medical Association, Greenville County Mental Health Association, American Heart Association and a charter member and past president of the South Carolina Heart Association. He was a certified life fellow of the American College of Physicians, a diplomate of the American Board of Internal Medicine and a diplomate of the National Board of Medical Examiners. A past president of the staff of Greenville General Hospital, where he was a consultant on medical service, he was also a consultant in medicine at Shriners Hospital for Crippled Children.

PHYSICIANS PLACEMENT SERVICE

Physician is completing residency in diagnostic and therapeutic radiology and wishes to begin practice in S. C. in July, 1970.

* * *

Physician completing senior year of general surgical residency and wishes to practice in South Carolina.

* * *

Physician interested in opening practice August, 1970 in hematology and cancer chemotherapy and internal medicine.

* * *

Board eligible Ob-Gyn interested in positions available in South Carolina.

* * *

Two man general practice partnership desires a third man. Fully equipped office space immediately available.

* * *

Physician with 6 years of general practice in small town in lower S. C. desires an associate or partner under 35 who has completed or will soon complete military obligation. Practice includes general medi-

cine, pediatrics, obstetrics, minor surgery, and trauma. 100 bed hospital two blocks from office. Salary open.

* * *

Board eligible internist would like to practice in the upper and western half of South Carolina.

* * *

Food and Drug Administration's Bureau of Medicine's Pesticides Program is seeking several physicians to serve as medical epidemiologists studying effects of pesticides upon local populace. Those interested should forward current curriculum vitae to J. J. Jennings, M.D., Post Office Box 2000, Eads Station, Arlington, Va. 22202.

* * *

Hospital to open this year in Lancaster, S. C. Interested physicians should write Dace W. Jones Jr., Post Office Box 460, Lancaster, S. C. 29720.

* * *

Physicians needed in Polk County, N. C., 18 miles from Spartanburg, S. C. Rent-free, 10-room clinic available.

The Journal of The SOUTH CAROLINA Medical Association

OCTOBER, 1969—VOL. 65, NO. 10

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Charleston, S. C. 29401

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The views expressed in this publication are those of the writers and do not necessarily reflect the opinions of the South Carolina Medical Association.

Contributions of Original Articles

Length—Short articles of about 2,500 words (about 8 typewritten pages, double spaced) are preferred. Longer articles ordinarily will defer to the shorter ones in schedule of publication.

Manuscripts—Manuscripts should be typewritten, double spaced, and the original and a carbon copy submitted.

Illustrations—Ordinarily publication of 4 small illustrations or the equivalent accompanying an article will be paid for by The Journal. Any number beyond this must be paid for by the author except under unusual conditions. Illustrations should be sent as glossy prints or graphs in black ink with lettering large enough to show after reduction.

References—Should conform to the following order: surname and initials of author, title of article in small letters, name of periodical, with volume, page, month, day of the month if weekly, and year—e.g.: Lee, G. S.: The heart rhythm following therapy with digitalis, Arch Int Med 44:554, Dec. 1942. They should be listed numerically in order of appearance in the text. Standard abbreviation for journals should be used. Note that periods are not used with these abbreviations as indicated by the Index Medicus. Other abbreviations should also be standard—e.g. mg, ml, Gm.

Reprints—Reprints will be made for the author at established rates.

Coming out of a depression.

Indication. Mental depression

Contraindications. Do not use MAO inhibitors concomitantly or within 2 weeks of the use of this drug. Hyperpyretic crises or severe convulsive seizures may occur with such combinations; potentiation of adverse reactions can be serious or even fatal.

When substituting Pertofrane in patients receiving an MAO inhibitor, allow an interval of at least 14 days. Initial dosage in such patients should be low and increases should be gradual and cautiously prescribed.

The drug is contraindicated following recent myocardial infarction and in patients with a known hypersensitivity to tricyclic antidepressants.

Warning. Activation of psychosis may occasionally be observed in schizophrenic patients. Due to atropine-like effects and sympathomimetic potentiation, use only with the greatest care in patients with narrow-angle glaucoma or urethral or ureteral spasm.

Do not use in patients with the following conditions unless the need outweighs the risk: severe coronary heart disease with EKG abnormalities, progressive heart failure, angina pectoris, paroxysmal tachycardia and active seizure disorder (may lower seizure threshold).

Desipramine and the parent compound, imipramine, have been shown to block the action of guanethidine and related adrenergic neuron-blocking agents.

Hypertensive episodes have been observed during surgery.

The concurrent use of other central nervous system drugs or alcohol may potentiate adverse effects. Since many such drugs may be used during surgery, desipramine should be discontinued prior to elective procedures.

Caution patients on the possibility of impaired ability to operate a motor vehicle or dangerous machinery.

Do not use in women who are or may become pregnant unless the clinical situation warrants the potential risk, and do not use in patients under 12 years of age.

Because of increased sensitivity to the drug, use lower than normal dosage in adolescent and geriatric patients.

Precautions. Potentially suicidal patients require careful supervision and protective measures during therapy. Discontinuation of the drug may be necessary in the presence of increased agitation and anxiety shifting to hypomanic or manic excitement.

Atropine-like effects may be more pronounced (e.g. paralytic ileus) in susceptible patients and in those receiving anticholinergic drugs (including antiparkinsonism agents).

Prescribe cautiously in hyperthyroid patients and in those receiving thyroid medications; transient cardiac arrhythmias have occurred in rare instances.

Periodic blood and liver studies should supplement careful clinical observations in all patients undergoing extended courses of therapy.

Adverse Reactions. The following have been reported: *Nervous System* dizziness, drowsiness, insomnia, headache, disturbed visual accommodation, tremor, unsteadiness, tinnitus, paresthesias, changes in EEG patterns, epileptiform seizures, mild extrapyramidal activity, falling and neuromuscular incoordination. A confusional state (with such symptoms as hallucinations and disorientation), particularly in older patients and at higher dosage, may require discontinuation of the drug. *Gastrointestinal Tract* anorexia, dryness of the mouth, nausea, epigastric distress, constipation and diarrhea. *Skin* skin rashes (including photosensitization), perspiration and flushing sensations. *Liver* rare cases of transient jaundice (apparently of an obstructive nature) and liver damage. If jaundice or abnormalities in liver function tests occur, discontinue the drug and investigate. *Blood Elements* bone-marrow depression, agranulocytosis, thrombocytopenia and purpura. If these occur, discontinue the drug. *Transient eosinophilia* has been observed. *Cardiovascular System* orthostatic hypotension and tachycardia. Carefully supervise patients requiring concomitant vasodilating therapy, particularly during initial phases. *Genitourinary System* urinary frequency or retention and impotence. *Endocrine System* occasional hormonal effects, including gynecomastia, galactorrhea and breast enlargement, and decreased libido and estrogenic effect. *Sensitivity* urticaria and rare instances of drug fever and cross-sensitivity with imipramine.

Dosage. All patients except geriatric and adolescent 50 mg t.i.d. (150 mg daily). Dosage may be increased up to 200 mg daily. Geriatric and adolescent patients should usually be started with lower dosage (25 to 50 mg daily) and may not tolerate higher doses. Dosage may be increased up to 100 mg daily.

Lower maintenance dosages should be continued for at least 2 months after obtaining a satisfactory response.

Mild anxiety and agitation which may accompany depression usually remit as the depression responds. Occasionally, however, a sedative or tranquilizer may be indicated.

Availability. Maroon and pink capsules of 50 mg in bottles of 100, pink capsules of 25 mg in bottles of 100 and 1000 (B)46-530-G.

For complete details, please see the full prescribing information.

And it can often begin to happen in 3 to 5 days with an antidepressant like Pertofrane. There's a lifting of depressed mood... a restoration of psychomotor activity. Patients usually begin to cope, work, maybe play, even enjoy.

It's not all beautiful. Sometimes there are side effects. And not everybody can take the drug. It may even be a slow process. But along with the care and comfort you give depressed patients, consider Pertofrane. Then consider the response.

Please read the prescribing information for full details on contraindications, warnings, precautions, adverse reactions and dosage. It's summarized on the left.

Pertofrane[®]

desipramine hydrochloride

New 50-mg.
capsules now available.

The Journal

of the

South Carolina Medical Association

VOLUME 65

OCTOBER, 1969

NUMBER 10

RABIES—A VANISHING DISEASE IN SOUTH CAROLINA

G. E. McDANIEL, M.D.

ARTHUR F. DISALVO, M.D.

Rabies is rapidly becoming another of the rarely occurring diseases in South Carolina. There has not been a human case since 1959 and no confirmed cases in domestic animals since 1963. In fact, with the exception of four cases in dogs in Florence County and one in Colleton County in 1963, there have been no confirmed cases in domestic animals since December of 1960. Rabies in bats was first reported in the State in 1963 when five positive cases occurred in three counties. Since then, one to two rabid bats have been reported per year during 1964-1967. No rabid animals were identified in 1968. This was not due to a paucity of examinations, because the Bureau of Laboratory Services and Research continued to receive more than 500 brain specimens per year for examination. There has been no evidence or any infection in the wild life of the State in recent years.

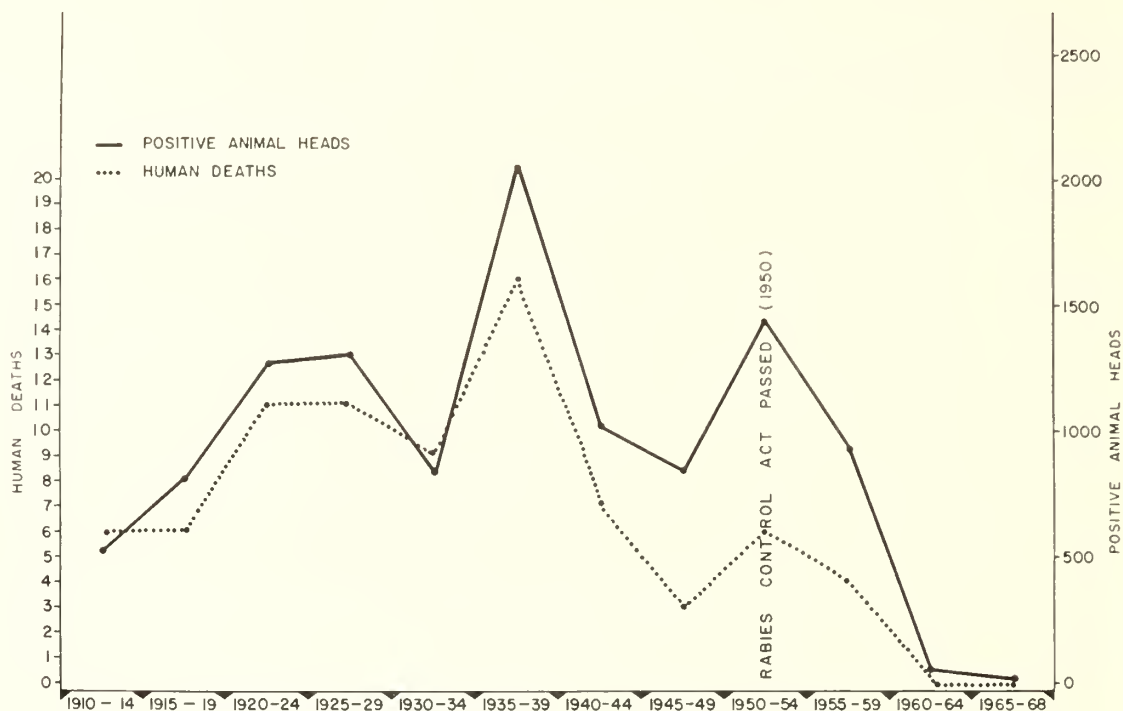
This is in contrast to the trend in the rest of the United States. In 1967, the National Communicable Disease Center reported a 10% increase of reported cases of rabies over 1966. These data also show that more rabies occurred in wild than in domestic animals.

Bureau of Laboratory Services and Research,
South Carolina State Board of Health, Columbia,
South Carolina.

The Hygienic Laboratory of the State Board of Health was established in 1909 and in that year began the preparation and distribution of antirabies vaccine as a service to the people of the State. From the beginning this vaccine has been distributed free of charge by the State Board of Health to anyone needing it upon the request of the person's physician. As the availability of the vaccine became generally known throughout the State, and with little or no control of the disease in animals, the use of the vaccine increased from only 121 persons treated in 1910 to a peak of 4,061 persons treated in the fiscal year 1934-1935. Its use continued at more than 2,000 persons treated annually until 1954, when a continuous decline began that has continued to an all time low of only 857 treated in 1968.¹ The majority of these treatments were given to recipients while the biting animal was under observation, and a relatively few to persons bitten by an animal that escaped and could not be located.

The vaccine distributed by the Laboratory until 1948 was prepared from rabbit brain tissue obtained from a commercial pharmaceutical firm. It was prepared by H. M. Smith, M.D., Director of the Hygienic Laboratory, and distributed in units of 21 doses as a complete treatment.

RABIES



Upon Dr. Smith's retirement the vaccine was purchased as a finished product. About 1960 the State Board of Health began the distribution of duck embryo vaccine because it had been shown to be less likely to cause post-vaccinal encephalitis. The rabbit tissue vaccine caused frequent severe local reactions and not infrequently, post-vaccinal encephalitis. In a six year period 1950-1955 there were six human deaths from rabies and three from post-rabies vaccine encephalitis.² The tragedy was that two of the persons who died of the encephalitis probably did not need to take the vaccine.

While the duck embryo vaccine causes encephalitis less frequently, it is vulnerable to potentially severe reactions. One case of typical anaphylactic shock has been reported in South Carolina following the first dose of duck embryo vaccine. Heroic immediate treatment saved the life of the patient. These experiences emphasize the necessity for carefully evaluating every patient prior to recommending antirabies vaccine. A careful history

of the patient and of the biting animal should be taken and evaluated.

There was a total of 79 human deaths from rabies in the 50 years 1909-1959, but none in the latest nine years 1960-1968. The trend of these deaths during this period was similar to that of the positive reports by the Laboratory (Chart 1). The greatest number of positive reports occurred during the five years 1935-1939, when 2,061 of a total of 3,340 examinations were positive. Reference to Table 1 will show that since 1934 more than 400 to almost 800 animal examinations were performed annually in the Laboratory with positive findings decreasing to only four in the period 1965-1968. There were no positive findings in any of the 481 animal specimens examined in 1968. The vast majority of the animal examinations are of dogs, the chief biting animal, but there are each year a number of other animal heads referred for examination including foxes, cats, raccoons, bats and an occasional squirrel and rat. In the light of prior history and these recent findings,

it would seem most unlikely that there is infection in the animal life of the State. In addition to the pain of the many doses of the vaccine, the unfortunate occasional death, and the great anxiety following the bite of a suspected rabid animal, there was the cost to the State of several thousands of dollars each year in providing the vaccine. These are additional reasons to restrict indiscriminate use of the vaccine.

Table 1

Rabies—Total Number of Human Treatments, Number of Human Deaths and Number of Animal Heads Examined by 5 Year Fiscal Periods, 1910-1968

Year	No. Human		No. Animal	
	Treatments	Deaths	Heads Examined	Positive
1910-14	1,077	6	276	526
1915-19	2,027	6	1,306	801
1920-24	3,785	11	2,455	1,272
1925-29	4,912	11	2,388	1,294
1930-34	6,259	9	1,734	837
1935-39	16,980	16	3,340	2,061
1940-44	15,606	7	2,157	1,022
1945-49	17,044	3	2,026	844
1950-54	12,411	6	3,649	1,435
1955-59	6,558	4	3,939	911
1960-64	2,247	0	2,180	27
1965-68*	857	0	1,999	4

*Four Year Period

The Executive Committee of the State Board of Health approved the Recommendations of the WHO Expert Committee on Rabies as the recommended practice in South Carolina.³ A copy of these recommendations is on file in each County Health Department.

In recent years there was the threat of a great economic loss from rabies among the increasing number of valuable cattle herds in the State. Because of this increase of livestock farms the veterinary profession was interested in instituting a more effective rabies control program. There had been a rabies control law in effect for a number of years but it had been ineffective in controlling the disease, as was evident from the extent of the infection in both animals and human beings.

Many counties were exempt from the law and the only provision for its enforcement was that doctors, veterinarians, druggists, police and others should cooperate in controlling rabies. The State Health Officer was authorized to declare a quarantine on all dogs in an area in which rabies had become epidemic. Only authority could bring an epidemic problem under control.

Consequently through the joint efforts of the Executive Committees of the South Carolina Veterinary Medical Association and the State Board of Health a new rabies control Act was passed by the South Carolina Legislature in 1950. This Act was statewide in its application and placed the responsibility for enforcement on the local board of health or health department. It required that all dogs be vaccinated once each year. This program became fully operative in 1951 and was directed by Dr. Frank M. Lee, Public Health Veterinarian with the State Board of Health, until his retirement 14 years later. The State Board of Health is responsible for the development of the plan of operation of the rabies program, the direction of the activities at state level, the provision of promotional materials, and State certificates, and consultation to the veterinary profession and to the local health departments. In general the local health department personnel, usually the sanitarian, organizes the vaccination clinics during a specified period annually. The practicing veterinarians in the counties furnish the vaccine, the tags for the vaccinated animals, and give the inoculations. The excellent and continued cooperation of the veterinary profession, the State Board of Health, and the County Health Departments has assured the success of the program. Another important factor in the success of the program is that it can be carried out annually in every county simultaneously. The effectiveness of the Act is shown by the reduction in the number of rabid animals in the State since

its inception in 1951 (Table 2). A number of other States have used the South Carolina Act as a model for framing their own rabies control legislation.

Laboratory Examinations

At the present time, three methods of detecting evidence of infection with rabies virus are employed by the Bureau of Laboratory Services and Research. Each specimen of brain tissue is given a preliminary screening for Negri bodies using Sellers stain. The method is rather simple and this examination is performed first. The suspected tissue is then examined by the Fluorescent Rabies Antibody method; a technique which takes much longer to perform but is more sensitive and specific than the direct tissue examination.

In selected cases of human exposure, intra-cerebral inoculation of mice with the suspected tissue will be carried out. This examination requires 21 days to complete.

Table 2

Rabies, Number of Animals Vaccinated, Clinical Cases in Animals, Positive Reports, and Human Treatments and Deaths by 5 Year Periods, 1950-1968

Year	No.		No.			
	Animals		Positive			
	Vacci-	No.	Reports	Human		
	nated	Clinical	In	Treat-	Human	
	All	Cases in	In	ments	Deaths	
Species	Animals	Animals	Animals			
1950-54	434,426	1,524	1,435	12,411	6	
1955-59	355,054	714	911	6,556	4	
1960-64	300,745	21	27	2,247	0	
1965-68*	204,629	4	4	857	0	

*Four year period

When a specimen is found to be positive for rabies, the physician will be notified by a collect telephone call at his request.

Submission of Specimens

When an animal is suspected of being rabid, especially if a human bite is involved, it *should not be killed*. The suspected animal should be kept under observation for at least 10 days. If the animal is healthy after this time, there is no need to examine the brain for evidence of rabies. If the animal dies during the period of observation, remove the head at once and place under refrigeration until it is brought to the State Laboratory for examination.

Shipping containers, examination request forms and instructions for transporting specimens are available at each county health department. The specimen should be kept refrigerated at all times. There is a night repository box at the rear of South Carolina State Board of Health (J. Marion Sims Building) in Columbia. This chute leads to a refrigerated holding box and may be used when the laboratory is not open.

Specimens that are shipped to the laboratory must be prepaid. Please do not bring the whole animal to the laboratory as we have no means to dispose of a large carcass. Small animals such as a bat or a mouse may be shipped intact.

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DUCK EMBRYO RABIES VACCINE

ANAPHYLACTIC REACTION FOLLOWING INITIAL INJECTION

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Anaphylactic shock reaction with peripheral collapse following the administration of duck embryo rabies vaccine has rarely, if ever, been reported in the more than ten years the vaccine has been in use. In a recent survey of the literature Jones¹ states that while local reactions are frequent, general reactions are only occasionally observed. "No deaths have been attributed to its use."

In view of the rarity of association of anaphylactic shock reaction with duck embryo rabies vaccine, it is felt that the report of the following case would be of interest.

Case Report: S. M., a 22 year old married woman, two weeks before had been exposed to a raccoon which had been thought to be rabid. The animal, which had been taken into the house by her husband and caged, was obviously ill at the time it was captured and had licked the hands of the patient on which there were several scratches from gathering oysters. The animal died five days after it was captured and slides of the brain tissue prepared with Sellers technique and studied at the State Health Department Laboratory in Columbia were reported as being negative for Negri bodies. However, a week later the State Health Department Laboratory reported that fluorescent antibody studies of the brain tissue were equivocally positive for rabies. The patient's husband, who had been bitten by the animal had already been given 6,000 units of antirabies hyperimmune serum and had been started on a two weeks course of embryo vaccine. (Some weeks later intracerebral mouse inoculations which had been carried out at the State Health Department Laboratory were reported as negative for rabies).

In view of the suggestive report that the animal was rabid, it was decided that the patient should be given a course of duck embryo vaccine. Since the exposure was considered a mild² one (animal lick on abraded skin), without actual bite, it was felt the vaccine would give adequate protection without use of the hyperimmune serum. The patient reported to the Immunization Clinic of the Charleston County Health Department shortly before 9:00 a.m. to start the course of treatment on February 27, 1968.

The nurse in charge carefully questioned her regarding any history of egg or drug sensitivity and this was denied. The patient failed to relate that her private physician had earlier advised against treatment because of a history of childhood asthma.

One ml of DEV was injected subcutaneously to the left of the umbilicus. Five minutes later, the patient complained of vertigo and shortness of breath. She was placed on the examining table and the Health Director and Assistant Health Director were immediately called. On their arrival, the patient was lying on her right side and was semicomatose. The radial pulse was weak and thready and the blood pressure could not be obtained. The chest was clear on auscultation. Epinephrine 1-1000, .5 ml was given subcutaneously. There was little response. After 5 minutes .3 ml of epinephrine was given intravenously. Five minutes later, 30 mg of Benadryl were given intravenously. This was followed in ten minutes by 100 mg of hydro-cortisone. The patient appeared to improve a little, although the blood pressure could still not be obtained. An intravenous infusion of 5% dextrose in water was started and she was transferred by ambulance to the Emergency Room of the nearby Charleston County Hospital.

The house physicians in the Emergency Room started an intensive regimen of supportive treatment including insertion of a Foley catheter, intravenous fluids in the right arm by a cutdown and left arm by Rochester needle. An allergist who had been called in, in consultation, recommended

*From the Charleston County Health Department and Roper Hospital.

the injection of .1 ml of 1-1000 epinephrine sulphate in 4 quadrants around the site of the DEV injection, thus making a "chemical tourniquet." During the next few hours, 3000 ml of Hartmann's solution was administered, 2 mg of Isuprel were given with the first 1000, 125 mg of Solu-medrol with 500 ml of dextran, then 10 mg of Aramine with the second 1000 ml of Hartmann's and finally 200 mg of Solu-cortef with the last 1000 ml. Oxygen by mask and nasal catheter was administered. After approximately two hours of shock with essentially unobtainable blood pressure, the patient began to improve and was moved to the Roper Hospital Intensive Care Unit.

On admission to the Intensive Care Unit at Roper, the patient was still acutely ill. The blood pressure was 112/84 mm Hg, pulse 92, and respirations 24. She had some edema of the face and eyelids but was conscious and responsive. There was no cyanosis. Respiration was free without bronchospasm and there was no evidence of laryngospasm. A generalized blotchy erythema was present on her body.

Laboratory studies on admission revealed the following findings: catheterized urine: specific gravity 0.015, trace of albumin, glucose 4 plus, acetone negative, microscopic was essentially negative except for 0 to 1 coarse and fine granular casts per HPF. Blood studies revealed 25,600 white cells with 92% polys, 7% bands, 1% lymphocytes and 4,390,000 RBC, serum iron was 58%. Two days later hemoglobin was 11 grams with 3,580,000 RBC and 7,400 WBC with 79% polynuclear cells, 6% bands, 13% lymphocytes and 2% monocytes. Reticulocyte count was 1%.

The BUN remained within normal limits on admission and during hospital stay. Serum electrolytes were essentially within normal limits the day following admission except that there was a potassium deficit (3 mEq). Portable x-ray film of chest was negative on admission. Electrocardiogram taken on admission was within normal limits.

Under supportive treatment with intravenous fluids and steroids, she began to improve. On the day following admission, she was moved from the Intensive Care Unit to a room and continued to progress satisfactorily.

She was discharged 7 days following admission considerably improved although a little weak. At no time was there any localized reaction at the site of the injection of the DEV in the left epigastric area. Examination made of the patient 9 months following this experience revealed that she was well without any sequelae.

Comment:

Duck Embryo Rabies Vaccine is killed viral vaccine prepared from a suspension of embryonic duck tissue infected with a

fixed virus. It became available for rabies prophylaxis in 1957¹ and has been widely used since that time. No deaths have been reported as resulting from its use.¹ Local reactions to it are frequent, generalized reactions are occasionally seen but neurologic reactions of the type associated with the use of vaccines of nerve tissue origin are rare.¹ Only five reactions of this kind have been reported and all cases recovered without permanent sequelae. The reason for the infrequency of this type of reaction with DEV is that it contains minimal amounts of nerve tissue compared to the Semple (nerve tissue vaccine) vaccine. Two cases of anaphylactoid reactions similar to the one described in this paper have been reported to the manufacturer (Eli Lilly) according to a personal communication³ from Dr. D. F. Stone but have not been reported in the literature. Both patients, according to Dr. Stone, were "treated in a manner similar to the therapy you used and both recovered quite rapidly."

An unusual type of reaction to DEV which has been reported in the literature by two different workers^{4,5} has been that in which the gastrointestinal tract was mainly involved and the symptoms were characterized by nausea, vomiting, severe abdominal cramps and diarrhea. There have been approximately 11 cases mentioned. It was felt that in some of these patients, previous immunization with yellow fever vaccine (grown on chicken eggs) had cross sensitized some of these individuals and made them more susceptible to this type of reaction with DEV. In the treatment of these patients intramuscular injections of 50 mg of diphenhydramine (Benadryl) proved almost specific. Milder cases responded well to 50 mg of the same drug given every 6 hours orally. Any candidate for rabies prophylaxis who gives a history of chicken or duck egg sensitivity should receive vaccine of nerve tissue origin (Semple).

Other types of reactions have been re-

ported.⁴ Kaiser et al cited Hildreth as stating that 41 of 1000 patients receiving the vaccine had some sort of systemic reaction. Twenty-one had chills and fever following the administration of DEV and 20 had urticaria or serum sickness or both. In another series, quoted by the same authors,⁴ three of 100 patients had a transient urticaria after receiving injections of DEV. Of course, as with other vaccines, varying types of local reactions such as erythema and induration may occur at the site of injection. They generally appear from the sixth to the tenth day of treatment, are seldom severe enough to stop treatment and they respond readily to antihistamines.

In instances where the patient has been bitten by a definitely proved rabid animal and some allergic reaction to DEV has occurred which is not life threatening and it is therefore mandatory that the course of therapy be continued, pituitary⁶ and adrenal corticosteroids should never be used to treat the patient. It is felt that a subclinical temporary rabies carrier state may exist and even be activated into clinical disease by the use of pituitary and adrenal corticosteroids. Therefore, these agents should never be used unless

there is a life threatening reaction. The utilization of antihistamines and epinephrine plus a bronchodilator when there is bronchospasm will generally counteract the allergic reaction and allow the patient to receive the full course of DEV.

Summary

A case of anaphylactic shock following administration of the first dose of duck embryo vaccine has been reported. Anyone who gives a history of egg sensitivity should strongly be considered as a candidate for vaccine of nerve tissue origin (Semple vaccine). If there is a history of recent injection of vaccine grown on chicken eggs (typhus, yellow fever, or influenza), duck embryo vaccine should be given with caution as the individual may have been cross-sensitized and made more susceptible to a reaction from duck embryo protein. It is not wise to use pituitary and adrenal corticosteroids in treating allergic reactions in patients who have been bitten by proved rabid animals, since a subclinical temporary carrier state may exist which might be activated into clinical disease.

The authors are deeply indebted to Dr. Charles H. Banov for his advice and help in the preparation of this paper.

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LUNG CANCER

CURRENT CONCEPTS IN DIAGNOSIS AND MANAGEMENT

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Lung cancer became the leading cause of death from cancer in the United States in 1954, and continues to hold that position. In the year 1968, approximately 55,000 persons in the United States, some 46,000 men and 9,000 women, died of lung cancer. It is the leading cause of male cancer deaths, the rate being more than 15 times what it was 35 years ago.¹ The overall cure rate for lung cancer is approximately 5%. With these facts in mind it seems pertinent to review current philosophies in diagnosis and management of this devastating neoplasm.

Etiology

The etiology of bronchogenic carcinoma remains a subject of considerable controversy; however, there seems to be little doubt that toxic inhalants play a significant role. There is an increase in the incidence of bronchogenic carcinoma associated with heavy occupational exposures to substances such as dust containing radioactive material, chromates, asbestos, tar and soot. Of more significance is the close correlation that has been established between the inhalation of cigarette smoke and the development of primary lung cancer. Supporting epidemiologic and statistical evidence is based on more than 25 retrospective studies conducted in 9 countries as well as 3 prospective studies carried out in the United States and England.^{2,3} All studies generally agree that the lung cancer death rate

among men with a history of regular smoking for at least 20 years is approximately 10 times greater than that of men who never smoked.

Histopathology

Primary lung cancer is generally classified in three basic histologic groups:

- (1) Bronchogenic carcinoma
 - A. Epidermoid carcinoma
 - B. Undifferentiated carcinoma
 - C. Small cell, anaplastic (oat cell) carcinoma
 - D. Adenocarcinoma
- (2) Adenomas
 - A. Carcinoids
 - B. Mucous gland tumors
- (3) Broncheolo-alveolar carcinomas

The most commonly encountered types are the epidermoid and undifferentiated or so called "cigarette cancers." These account for approximately 60% of all bronchogenic carcinomas. Twenty-five to 30% are of the small cell type, and 8-10% are adenocarcinomas. Adenocarcinoma is not as clearly identified with smoke inhalation and does not seem to be related to substances recognized as carcinogens. The apparent increasing incidence of lung cancer has been associated with the epidermoid and undifferentiated cell groups.

Clinical Features

The symptoms of carcinoma of the lung are due primarily to the tendency of the neoplasm to produce mechanical obstruction and erosion with subsequent infection. The first symptoms to appear may be so mild that they are over looked by the

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patient and his physician for weeks or even months. Retrospective analysis of large groups of patients with carcinoma of the lung reveals that in a high percentage of cases symptoms were present for considerable periods of time before there were any demonstrable radiologic changes.⁴

Table I
Lung Cancer Symptoms*

- 1) Cough
- 2) Wheeze
- 3) Hemoptysis
- 4) Fever
- 5) Dyspnea
- 6) Pain
- 7) Compression of:
 - a. Esophagus-dysphagia
 - b. Recurrent nerve-hoarseness
 - c. Superior vena cava-headache
 - d. Cervical ganglia-Horner's syndrome

*Produced by obstruction, erosion and secondary infection.

The symptoms most frequently encountered in this patient population are listed in order of their frequency, in Table I. Cough is present in approximately 80% of the cases, and is one of the earliest and most frequent symptoms of lung cancer. The nature of the cough will depend upon the size and location of the tumor as well as the rapidity of growth and the degree of associated or secondary infection.

Wheezing may be present, occurring in about 25% of patients with bronchogenic carcinoma and is generally most noticeable when the patient is fatigued.

Hemoptysis is the symptom that almost invariably brings the patient to a physician. This symptom is a manifestation of the tendency of bronchogenic carcinoma to produce bronchial erosion. Some series report as high as 40% of bronchogenic carcinoma patients presenting with this symptom.^{5,6}

Fever, especially in association with an unresolving or recurrent pneumonitis, should be regarded with a strong suspicion of underlying malignancy. This is especially true in the male patient with a

history of heavy cigarette smoking or industrial fume exposure. Associated symptoms such as malaise, lethargy, anorexia, and loss of weight are characteristic of a simple pneumonia, and may show considerable resolution on a conservative medical regimen. As the symptoms abate and radiographic evidence of pneumonia clears, the physician may be lulled into a false sense of security. A careful follow up of patients like this all too often reveals that the pneumonia has resolved leaving a residual radiographic density characteristic of bronchogenic carcinoma. A very small tumor may be so critically located as to produce a large area of distal atelectasis and pneumonia. If discovered at this stage the chance of cure is considerably enhanced.

Dyspnea is not commonly caused by carcinoma of the lung unless the tumor is producing airway compromise or is diffusely infiltrative resulting in a considerable decrease in ventilatory volume.

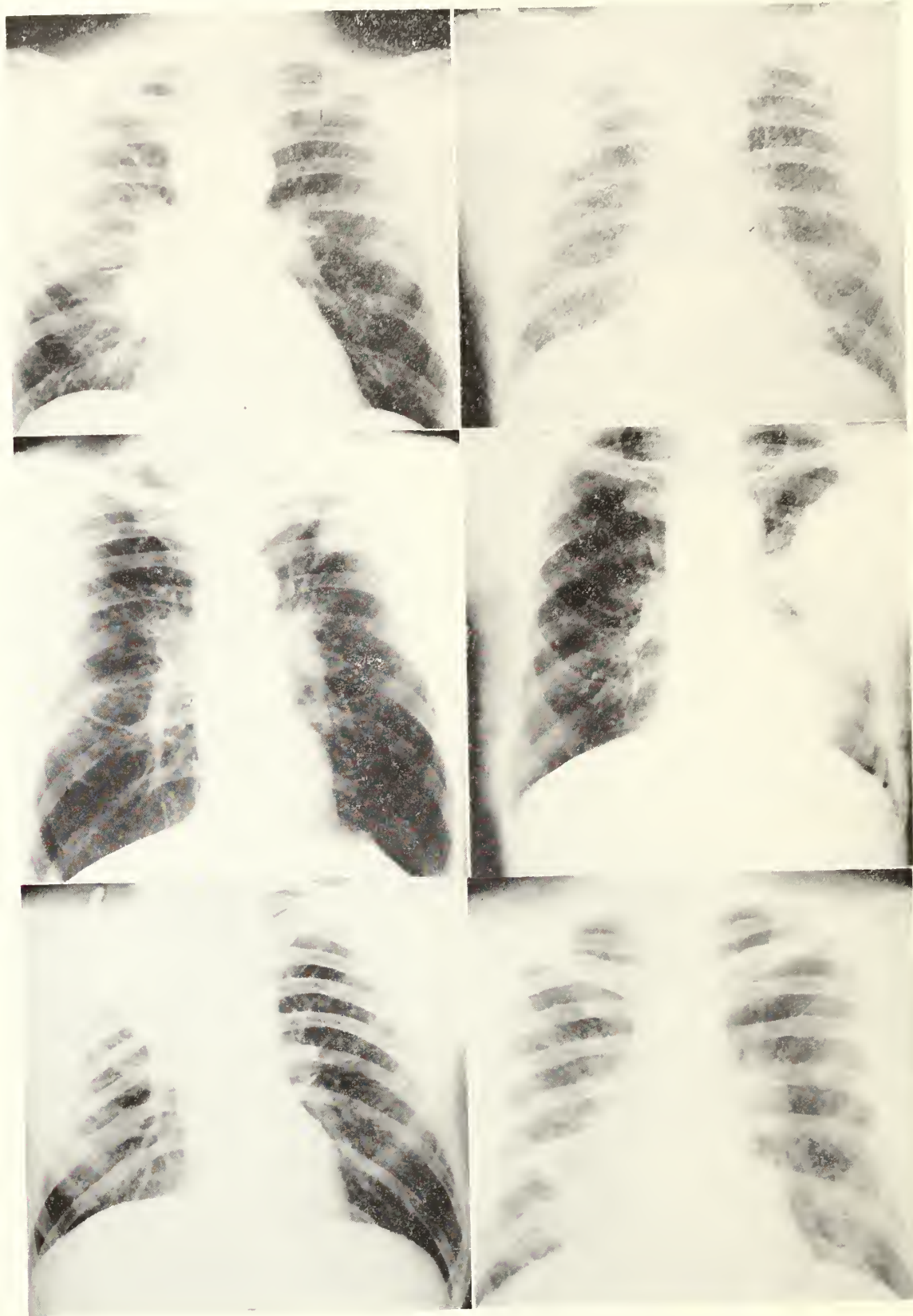
Pain is a late and ominous symptom of carcinoma of the lung. This is generally produced by erosion of the tumor into contiguous structures which are innervated by nerves with a somatic reference. Occasionally patients will have pain with a tumor that is peripherally located and which has no relation to surrounding structures. The mechanism of this pain is unknown.

Symptoms of secondary compression on structures such as the esophagus or vena cava occur very late in the disease process. At this stage the disease is generally amenable only to palliative treatment.

Diagnosis

Early diagnosis is an essential determinant in the prognosis of patients with carcinoma of the lung. Physicians must harbor a high index of suspicion that carcinoma of the lung may be present especially in the "high risk" group of patients, classically the middle-aged heavy smoker. Periodic physical examinations including chest x-ray films form the basis

Typical X-Ray Findings in Patients with Carcinoma of the lungs (Figs. 1-6)



of our present war on this dread disease.

Diagnostic methods employed in carcinoma of the lung are listed in Table II.

Table II

Lung Cancer Diagnostic Methods

Commonly

Employed

- 1) X-ray-fluoroscopy
- 2) Bronchoscopy
- 3) Sputum cytology
- 4) Lymph node biopsy
 - a) Scalene
 - b) Mediastinal

Rarely

Employed

- 5) Needle aspiration
- 6) Pulmonary angiography
- 7) Intraosseous venography
- 8) Exploratory laparotomy

Radiographic studies are certainly one of the most important means available for early detection of lung cancer.^{7,8} Radiographic findings are extremely variable as illustrated in Figures 1 through 6. The changes seen on the x-ray film will of course depend upon the location of the tumor and may be due more to the secondary than to the primary effects of the tumor mass.

Bronchoscopy is an integral part of the diagnostic work-up for the patient with suspected carcinoma of the lung since approximately 75% of the tumors are found in the major bronchi. This should be employed early in the evaluation of this patient population.^{8,9}

Examination of sputum and bronchial washing cytology has proven to be a valuable adjunct in the diagnosis of bronchogenic carcinoma.¹⁰ Negative cytology, however, does not rule out the presence of bronchogenic carcinoma especially if the tumor is located in the periphery of the lung, and is not eroding or arising from a major bronchus.

Lymph node biopsy is a widely used diagnostic method. This affords information of both diagnostic and prognostic significance.⁸ Carcinoma of the lung characteristically drains to the hilar, mediastinal and scalene node chains, in that or-

der. The scalene node is easily accessible under local anesthesia and may account for as high as 20% of positive diagnoses. A mediastinal lymph node obtained by mediastinoscopy or mediastinotomy under general anesthesia similarly affords an important diagnostic reference. This is especially valuable in patients whose general condition may negate exploratory thoracotomy. There is considerable debate as to the influence that positive scalene or mediastinal nodes should exert on the operability of lung neoplasms, but there is little doubt about the fact that a positive lymph node weighs heavily against curative resection.

Other diagnostic procedures such as needle aspiration of the pleura or tumor mass, pulmonary angiography, intraosseous venography and exploratory laparotomy with liver biopsy are available, but are only employed when specific indications are present.

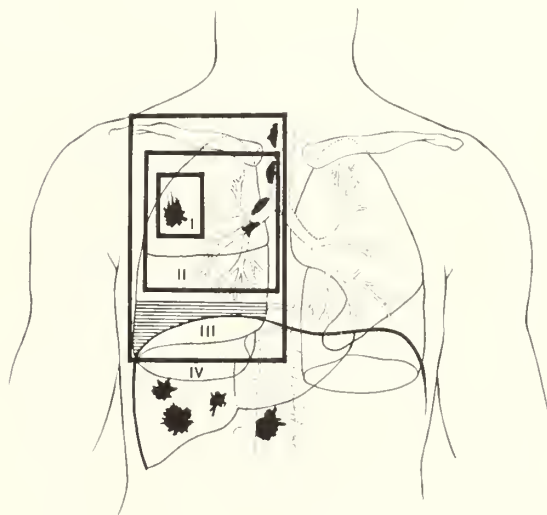


Figure 7

Treatment

The treatment of lung cancer depends primarily upon the stage of the disease as represented schematically in Figure 7. The available treatment methods listed in Table III are explicit; however, philosophies relating to the treatment regimen offered to various patients are as in-

Table III
Lung Cancer Treatment Methods

- 1) Surgery
 - a) Wedge Resection
 - b) Lobectomy
 - c) Pneumonectomy
- 2) Radiotherapy
- 3) Chemotherapy
- 4) Combination (Adjuvant)

dividual as the physicians who advance them.

Surgery is by far the most effective treatment in that it offers the best hope for curing bronchogenic carcinoma. Generally accepted indications for surgery outlined by Ochsner⁹ include (1) tumor localized to the lungs; (2) tumor which has spread only to regional nodes and contiguous structures; and (3) palliation of symptoms that cannot be controlled by more conservative means. The magnitude of resection will of course depend upon the extent of tumor growth, but is generally confined to the removal of a single lobe. Pneumonectomy has demonstrated no advantage over lobectomy unless mediastinal nodes are involved or the tumor has crossed lobar planes.

Surgery unfortunately cannot be offered to all patients with cancer of the lung; in fact 30 to 40% of patients will be found inoperable when first seen by the physician. The current and most widely acceptable criteria of inoperability, both absolute and relative, are listed in Table IV.^{6,9,11} The attitude of surgical aggressiveness that has been practiced during the past 10 years has demonstrated that many patients who would have been considered inoperable by virtue of invasion of regional nodes or chest wall, have significantly benefited from radical surgery.¹² This has been one of the few optimistic observations in this otherwise morbid situation. There is little disagreement that distant metastases, the presence of bilateral neoplastic disease, direct mediastinal invasion, and a cytologically positive pleural effusion are absolute contraindications to curative surgery. Relative

contraindications include the presence of tumor in regional lymph nodes, involvement of the recurrent laryngeal, phrenic or cervical nerves, and direct extension of the neoplasm into the chest wall.

There are of course other factors which influence operability that have proven to be significant in relation to long-term survival of patients with bronchogenic carcinoma. Included would be the general condition of the patient, the histological type of tumor, and evidence of blood vessel invasion.¹³

Table IV
Lung Cancer Criteria Of Inoperability

Absolute

- 1) Distant metastases (brain, liver, bone, contralateral lung)
- 2) Mediastinal invasion (esophagus, myocardium, trachea)
- 3) Pleural effusion with positive cytology

Relative

- 1) Neoplastic mediastinal lymphadenopathy
- 2) Selective involvement of recurrent laryngeal, cervical or phrenic nerves
- 3) Chest wall extension

Radiation therapy is an alternative form of treatment that is highly useful in management of the localized symptomatic tumor. It is the treatment of choice for the metastatic lesion, and can produce dramatic relief of the symptoms produced by pressure of the neoplasm on vital structures and in bone. Cobalt 60 and 2 million volt x-ray therapy are capable of altering the progress of a lung neoplasm in some patients for months, but prolonged survival with this form of treatment is exceedingly rare. The highly undifferentiated and oat cell cancers are the most radio-sensitive tumors, but even with these tumors the long-term results of x-ray treatment have been disappointing. There is increasing application of radiation as adjuvant therapy followed in 4-6 weeks by surgical resection.¹² The value of this combined treatment regimen is the subject of considerable debate since there has been very little evidence of improved survival while at the same time postopera-

tive complications have increased. The greatest value of adjuvant radiotherapy appears to be in rendering a previously inoperable tumor amenable to surgical resection.

Chemotherapy employing various anti-metabolite drugs is employed for palliation of the patient with far advanced symptomatic lung carcinoma. Unfortunately, this has proven of no value as a curative agent in the management of lung cancer. The side effects of chemotherapy such as gastric discomfort, nausea, dizziness, and bone marrow depression occasionally out-weigh any anticipated benefits of the drugs.

Prognosis

The survival rate for bronchogenic carcinoma remains at a depressingly low 6 to 8% for the 5-year period. Pulmonary resection increases the 5-year survival rate to 15%. Without pulmonary resection the

chance of cure is almost nil, and the patient seldom lives more than 3 years after the diagnosis of lung cancer is made. Prognosis is better in female patients, in individuals younger than 50 years of age, with neoplasms of the epidermoid variety, and with the small solitary neoplasm located in the lung periphery. In general, however, it must be stated that the overall prognosis for patients with lung cancer is poor.

In our present state of ignorance regarding the basic mechanisms of malignancy it is incumbent upon the medical profession to direct attention toward controlling these factors which appear to possess an etiologic potential in the development of neoplasms. That a relationship exists between cigarette smoking and lung cancer is difficult to ignore. Preventive medicine must be practiced by education and example.

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STATUS OF PHYSICIAN REPORTING OF COMMUNICABLE DISEASES IN SOUTH CAROLINA

WILLIAM M. JOHNSON, M.D.*

Physicians in the state of South Carolina are required by law to report communicable diseases promptly to local community health authorities. A list of notifiable diseases to be reported is printed on the inside cover of the booklets containing morbidity reporting cards. These booklets are now mailed every six months routinely to all general practitioners, internists, pediatricians and to any physician or medical facility requesting the reporting cards. In addition, booklets of morbidity reporting cards are furnished any time physicians request them.

The purpose of this report is to emphasize the need for physicians to improve their reporting of communicable diseases.

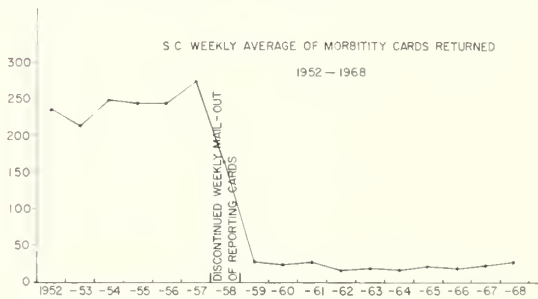


Figure 1

The weekly average of morbidity reporting cards returned to the State Board of Health since 1959, has dropped to approximately 10 per cent of the 1952-1957 era, Figure 1. This precipitous drop paralleled the discontinuance of weekly mail-outs of morbidity reporting cards to physicians in 1958. Weekly mail-outs of a single

*EIS Officer, S. C. State Board of Health, Columbia, S. C.

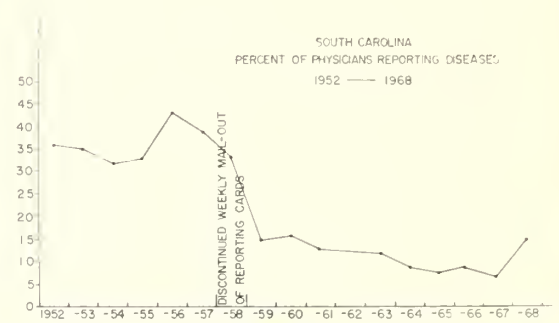


Figure 2

reporting card were discontinued since it became more economically advantageous to provide physicians with a larger supply of cards in booklet form. In retrospect, the percentage of physicians reporting diseases also dropped precipitously during 1958 and continued to gradually decline until 1968. (Figure 2.) The percentage of physicians reporting diseases is computed from the following information: the number of physicians reporting diseases one or more times during the year and the number of licensed physicians in the state for the same year. Obviously some of the state's licensed physicians would not see reportable diseases as a result of retirement, specialization, et cetera. However, it is unlikely that licensed physicians not seeing reportable diseases have increased appreciably during this study period. Thus, it seems reasonable to interpret the decline in physicians participating in the reporting of diseases as highly significant.

It is noteworthy that the counties for which physicians failed to report communicable diseases steadily and sharply

increased from 1958-1966, Figure 3. The reduction in counties failing to report diseases during 1967 and 1968, is attributable to renewed interest in disease reporting.

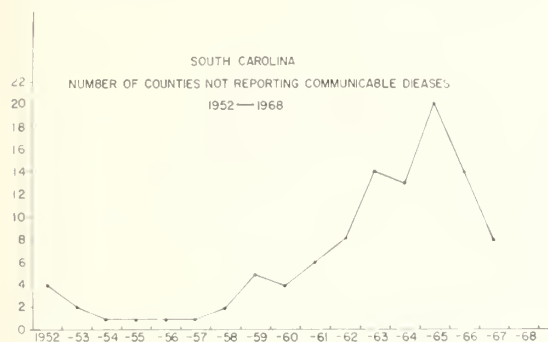


Figure 3

Many of the programs for community health and preventive medicine today would be inconceivable without access to disease morbidity and mortality reports. These reports serve as the source data for the measurement of the incidence and prevalence of disease, which are useful

for both administrative planning and formulating epidemiologic control measures for diseases. Another use of this information includes the identification of individuals at highest risks to certain diseases by comparing disease rates in different populations, in different parts of the same population, and in similar populations over a period of time. The pattern of occurrence of diseases is also a measure of the effectiveness of preventive health programs and other public health programs. Additionally, disease reporting at times may provide clues to the etiology of a disease and, therefore, is a prerequisite for the control of diseases.

It is hoped that this report will stimulate new interest in the reporting of diseases and encourage physicians and medical groups to report communicable diseases promptly.

STATEMENT OF OWNERSHIP, MANAGEMENT AND CIRCULATION

(Act of October 23, 1962, Section 4369, Title 39,
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X-RAY FILMS OF THE MONTH

JACK E. ARRANTS, M.D.,
S. ELLIOTT PUCKETTE JR., M.D.

*Medical University Hospital of the
Medical University of South Carolina,
Charleston, South Carolina*



Films illustrated are those of a 26 year old white male who had been in an automobile accident three years previously. His primary problem at the time was a fractured left tibia for which he was hospitalized three days. At the time he noticed that the upper part of his abdomen and left side of his chest hurt when he changed position, but nothing was made of this. Following his discharge, he considered himself well and healthy with the exception at times of a pain in his epigastrium upon eating large meals. Occasionally the pain radiated to his left shoulder. He also noted occasional vomiting. These complaints would be relieved by lying down or lying on the right side. Shortly before admission, he was suspected clinically of having pneumonia, leading to the PA film of the chest illustrated in figure one. He was subsequently given barium and the film in figure two was obtained.

This patient illustrates well the clinical history and radiographic findings of a chronic rupture of the diaphragm. His

physical findings also are classical in that prominent bowel sounds could be heard on the left side of the chest.

Damage to the diaphragm may result from either of two mechanisms. One is a direct laceration such as would occur with a knife or other penetrating object. The second mechanism, such as occurred in this case, is rupture due to a marked increase in intra-abdominal pressure, usually as a result of crush injuries to the abdomen. More than 90% of these occur on the left, the liver offering some protection to herniation on the right. The extent of the laceration may vary, allowing only a small loop of bowel to herniate, or may be of such size that the stomach, spleen, small bowel, and colon may enter the thorax. Three major complications are: (1) Compression of the lung producing dyspnea, (It may be particularly noticeable following eating if the stomach is a part of the herniation), (2) Obstruction, usually resulting in vomiting, (3) Torsion which may produce strangulation of the blood supply to the involved organs.

Rupture of the diaphragm should be suspected in all cases of crush injury involving the trunk, especially when associated with shock and dyspnea or with vomiting and thoracic pain. In the acute case, the chest film usually shows air and fluid present in the space normally occupied by the left lower lobe of the left lung. The diaphragm often cannot be distinguished. A barium swallow is usually the first step to exclude the possibility of a rupture of the esophagus. A nasogastric tube may then be introduced. Its course usually is through the normal esophageal hiatus and then back into the left side of the thorax. If the stomach is in a normal position, additional contrast media may be introduced through the tube and followed through the GI tract to locate the small and large bowel.

In the chronic rupture the diagnosis may be overlooked as the herniated, distended part of the stomach or colon is shaped like a cupola, and thus may be mistaken for a high diaphragm due to paralysis or even considered a large lung cyst. Differential diagnosis between ruptured diaphragm and paralysis or relaxation of the diaphragm may be difficult. Occasionally in the upright position the herniation will be noticed to drop back into a normal position, which will not oc-

cur in a case of paralysis or relaxation.

Usually, barium meal or barium enema or both will be necessary to establish the diagnosis. Another method is to introduce air into the peritoneal space. This in turn will produce a pneumothorax, as laceration of the diaphragm almost always involves both the peritoneal and parietal pleura in addition to the muscular portions of the diaphragm. It should be remembered that the amount of air used should be limited as the compressed lung may not be able to tolerate additional collapse from a large pneumothorax.

Treatment: Treatment for rupture of the diaphragm is surgical and should be done promptly once the diagnosis is made. If the rupture is an acute process, the surgical approach can be through the abdomen with repair of the diaphragm, and exploration to rule out any damage to other viscera. In a chronic rupture of a diaphragm, as in the present one, the approach should be transthoracic. The transthoracic approach is preferred due to adhesions which often form between the displaced abdominal viscera and the lung and surrounding mediastinum. The results from repair of an isolated ruptured diaphragm are excellent, and the compressed lung readily expands with no limitation of respiratory function.

President's Page



Physicians have always been the first to decry the rising cost of health care. Our voices will *not* be drowned out—if our actions speak louder than words. Many of us were reactivated early last month by participation in the State Health Department seminars on utilization control. We sat with the hospital and nursing home administrators, to work out what we could do together for the common good.

Hospitalization is more costly than physicians' services, in most illnesses. But the physician is the key to more effective use of hospitals, in coordination with other and less costly loci of treatment. At the seminars we learned that we haven't been keyed-in, as well as we should be, here in South Carolina.

Patient expenses per day of hospitalization in South Carolina have been \$39.55 in 1967, \$42.91 in 1968, and \$49.35 in 1969. At these costs, South Carolinians shouldn't be hospitalized unless absolutely necessary, and shouldn't stay in the hospital a day longer than necessary. But they are, and they do.

In sharp contrast, the alternatives are nursing home care with a cost per day that falls between \$10.59 and \$16.61, or home care with an average cost of \$12.00 for a nursing visit.

Last year the national hospitalization incidence rate was 124 admissions per 1,000 persons. The rate in the South was only 123 per 1,000. But the South Carolina rate was 140 per 1,000. So far this year, the South Carolina rate is 142 per 1,000, and the average length of stay is 7.17 days. If we could reduce the admissions per 1,000 population to the national average, the cost of hospital care would be reduced \$13,000,000 per year in South Carolina.

I doubt that South Carolinians are generally sicker than other Southerners or other Americans. More likely, South Carolinians are too often hospitalized and stay there too long because of weak utilization reviews.

No other profession or occupation has been granted the high degree of self-government that medicine enjoys. So far utilization review is still peer review, a self-review. We dare not let it fail, else our liberty will not long endure.

William L. Perry, M.D., President

LINES TO A NEWBORN

By Robert Quinn, M.D.

I, who aided lately your expulsion
Should regard you, rightly, with revulsion.

What emanates from newborn girl or boy
To fill my heart with uninvited joy?

Editorials

Compulsory Health Plan Boosted

On September 2nd at the National Governors Conference in Colorado, a minority of governors maneuvered adoption of a resolution supporting compulsory health insurance . . . Governor Nelson A. Rockefeller of New York, Chairman of the Committee which drafted the statement, triumphed because conference rules require a three-fourths majority to change a committee proposal . . . The majority which was defeated by the maneuver favored Federal incentives to encourage the purchase of adequate private health insurance in place of the compulsory system . . . One such incentive would be a tax credit.

Walter Reuther, President of the United Automobile Workers Union heads another organization which will meet next month to plan for imposing compulsory health insurance in the United States.

As we all know, Medicare was only an opening wedge . . . Fabian Socialists and their supporters who pushed for Medicare never intended to stop at that point, but made it clear to those who would read that they intended to impose regimentation on both doctors and their patients . . . All that has transpired since 1965 could have been easily anticipated, as AAPS predicted, on the basis of developments in Europe . . . The whole welfare mess in Europe and now in the United States is cut from the same cloth.

The misery, degradation, indignities and poor quality care that is always inherent in government medicine should cause us to renew our efforts and exercise more in-

One of the besetting sins of the scientific present has frequently been a certain contempt and lack of understanding for the scientific past. Yet we find often enough that when men have made what they believe to be radical intellectual departures from the past they have in fact done little more than

genuity to prevent the Rockefellers and Reuthers from forcing government medicine upon us.

Reprinted from NEWS LETTER, Sept., 1969, of the Association of American Physicians and Surgeons.

Funds For Epilepsy

Under the pressure in Washington to reduce sharply the overall size of the mounting federal budget, it is felt in many quarters that several small but vital services will wind up victims of the pruning process. Typical of such items are government funds for medical research.

When it was learned that the modest budget for neurological research, which involves the badly needed exploration in epilepsy, was to be cut 40 per cent the Epilepsy Foundation of America urged its members to write congressmen on the sad consequences of such pointless economy. This would mean that government assistance in this quarter would be reduced 50 per cent in two years, and according to the Professional Advisory Board of EFA, "set the whole research program in epilepsy back ten years."

It is heartening to know that requests to stay this drastic cut brought prompt action from three of South Carolina's congressional delegation, Senators Hollings and Thurmond, as well as Rep. Rivers. All requested Rep. Dan Sullivan, chairman of the subcommittee on health, education and welfare in the Appropriations Committee, to restore this cut. The pressure may save the badly needed federal funds for Sen. Hollings reports that he has been assured the \$59,600 allotted to the National Institute of Neurology for 1970 will stand.

resurrect or reshuffle older beliefs. The familiar saying that those who do not understand history are condemned to repeat it is more relevant in connection with intellectual history than anywhere else.

L. J. Rather, *Mind and Body in Eighteenth Century Medicine*



SOMETHING NEW ON TOP

Additional protection against the expenses of non-occupational illnesses or injuries is now available for your patients enrolled in Blue Cross - Blue Shield of South Carolina. It comes in a new Major Medical Expense contract, recently approved by the State Insurance Department, and offered to subscribers in amounts of \$5,000 and \$10,000, or \$10,000 and \$20,000.

Several of the largest Blue Cross - Blue Shield groups are already enrolled in the new major medical program, and their coverage is already in effect. The coverage includes out-of-hospital drugs, therapy, nursing, ambulance service and prosthetics, as well as more hospital and physicians services supplementing the basic Blue Cross - Blue Shield benefits.



Blue Cross - Blue Shield
OF SOUTH CAROLINA

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1969-70

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ABBREVIATED MINUTES
SOUTH CAROLINA MEDICAL ASSOCIATION
HOUSE OF DELEGATES
ONE HUNDRED AND TWENTY FIRST ANNUAL SESSION

May 12, 13, 14, 1969

Ocean Forest Hotel

Myrtle Beach, South Carolina

JOEL W. WYMAN, M.D. Presiding

Second Day

The Chair: The first order of business, I see we have a number of students from the Medical College. We welcome you, gentlemen. We are happy that you could be with us and we are expecting you to attend the alumni luncheon at noon today or shortly thereafter, and the banquet. You may get your tickets by reporting to the respective desks in the lobby. There will be no cost to you. This is the expense of the Association. These tickets are furnished by the Alumni Association and the South Carolina Medical Association and all arrangements have been made. Again, we welcome you and we are glad to have you and we hope you will find this meeting interesting and instructive. I'd like very much for you to stand. Will all the medical students stand? (Applause).

It is my pleasure now to introduce a member of the student AMA, at the Medical College, Mr. Edward H. West who will address you. Mr. West, will you come forward, please.

(After speech, applause and standing ovation.)

The Chair.: May I further express our appreciation to Mr. West and the medical students for this fine speech. We certainly appreciate your frankness. We thank you again for presenting it as you did and you did a good job. You can tell by the applause that these doctors are impressed. Thank you.

Dr. Donald G. Kilgore, Fourth District, (Recognized):

Mr. President, I would suggest that if plans have not already been made, that Mr. West's remarks be published in The Journal of the South Carolina Medical Association at the earliest opportunity.

The Chair: Thank you, sir, Doctor. We will refer this to Council.

(Note: This speech has been published in The Journal)

Dr. John Booker: Mr. President,

Whereas, Dr. Frank C. Owens has requested relief from his position as Chairman of the Medical Advisory Committee to Selective Service, and

Whereas he has devoted many years requiring both time and effort in carrying out the requirements as Chairman of the Committee in an impartial and efficient manner, and

Whereas he has represented this Association in a most reputable and respected manner in the course of his duties.

Be it resolved that the Council of the South Carolina Medical Association expresses deep gratitude and appreciation for a service well done, and we ask that the House of Delegates concur.

The Chair: Thank you, Dr. Booker. I am sure that we don't need a second. I am sure that we all unanimously agree the great service that Dr. Owens has given this Association through this committee. This has been a tough job and I am not very envious of the man who takes his place.

There is one other short resolution and I have been asked to read this.

"During the past year, the South Carolina Medical Association lost one of its most faithful Councilors. Dr. Clay Welborn Evatt was serving his ninth year as a member of Council from the First District when death came on January 31, 1969.

His honors and accomplishments were many and varied, and have been appropriately enumerated in the Memorial Resolution adopted by the Charleston County Medical Society.

The Council of the South Carolina Medical Association feels keenly the loss of this devoted member and hereby requests that the House of Delegates at this time give special tribute to his memory and that the Secretary of the Association be directed to convey to his family this expression of sympathy and of the high esteem of the Association."

Gentlemen, I would ask you to stand now for a moment of silent prayer, in memory of Dr. Evatt. (all standing).

The Chair: Now, we may go into our regular business and with the reports of the Reference Committees. I am going to ask our distinguished Vice President if he will take the chair for the report of Council and Officers, Dr. Clay Evatt, Jr., Chairman. Dr. Evatt.

Dr. Clay Evatt, Jr., Charleston, (Recognized):

The Reference Committee of Reports of Council and Officers met on May 12, 1969, and the meeting was called to order at 3 p.m. Present were Clay W. Evatt, Jr., Chairman, Hugh E. Vincent, Jr., Albert E. Cremer and William T. Hendrix.

The reports of the President, President-Elect, Executive Secretary, Secretary, Treasurer, Editor of the Journal, Chairman of Council and Delegates to the AMA and the President of SCALPEL represented hard work well done and were recommended to be accepted as information.

The Committee disagreed with Dr. Waring's statement that he was "growing no younger and no more intelligent." We, the Committee, do recommend that the Executive Committee of the South Carolina Medical Association, as Dr. Waring requested, seek an understudy to assist him in his work as Editor of the South Carolina Medical Association Journal.

Respectfully submitted,
Clay W. Evatt, Jr., Chairman

The Chair: We will now have the report of the reference Committee, Legislation and Public Relations, from J. Harvey Atwill, Jr., Chairman.

Dr. J. Harvey Atwill, Jr., Mr. President, we met yesterday afternoon with full attendance, composed of Dr. Allison, Dr. Moise, Dr. Jenkins, Dr. Elmore, and myself. We had very fine attendance and we would like to report on several items. The reports on Legislation and Public Relations appears in the Journal as does the report of the Committee on Public Relations. These we would like to recommend for adoption, representing a considerable amount of effort on the part of these Committee members.

Dr. Atwill: Our committee moves for the acceptance of the report on Legislation and Public Relations appearing in the Journal. (Passed)

Dr. Atwill: The next resolution that we have is tion of the report of the committee on Public Relations also appearing in the Journal.

Dr. Atwill: The next resolution that we have is

Dr. Atwill: The next resolution that we have is Service regarding professional automobile expenses and their utilization. The Committee in this in-

stance reports favorably on this resolution, which states essentially that this matter be referred to the Legislative Affairs Committee to investigate rather than the South Carolina Medical Association for investigation and action. (Passed)

The next is a resolution from the Charleston County Society in regard to an affirmation. I will read the resolution portion of it, to identify it for you, "Be it resolved that the South Carolina Medical Association voluntarily and vigorously affirms to the Medical College its full continued and energetic support." Your committee endorses this resolution and submits it for your approval.

Dr. Henry Moore, Columbia Medical Society:

I would like to speak primarily to second this motion affirming the action and the work of the Medical College Trustees, President McCord, and do it on behalf of the Class of 1939, who met last night in the Thirtieth Class Reunion, and unanimously asked that our class back the work that has been done in Charleston by the Board of Trustees, President McCord and the Governor, who backed them, we are on hundred per cent behind them.

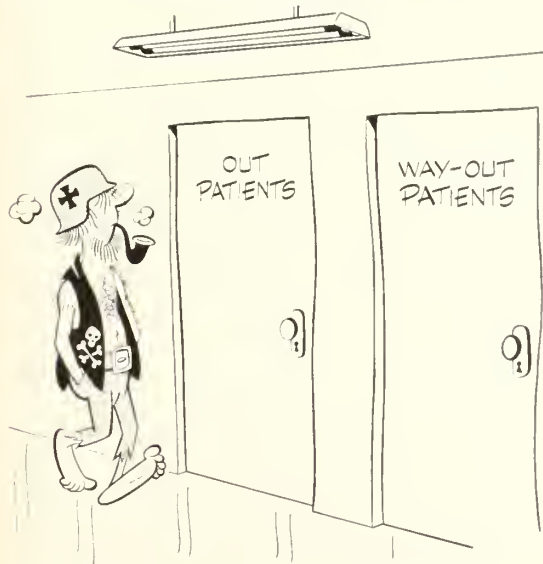
The Chair: Thank you very much, Dr. Moore. We appreciate that. (applause). Vote taken and so ordered.

Dr. Atwill (continuing): The next resolution, entitled Resolution Number One, and I will read this, "Resolved: That the South Carolina Medical Association expresses its gratitude and appreciation to the hundreds of loyal, dedicated, and conscientious hospital workers in Charleston, both voluntary and salaried, who, at great personal cost in time and effort, and in face of threats, have continued to serve the needs of the ill of this community and state during the crisis in Charleston." (Passed)

Dr. Atwill: Mr. President, I am sure that Council will take cognizance of this, but it was the expressed feeling of the committee and by those who were there participating in the discussion, that this particular resolution should receive wide distribution and preferably individual distribution to each of these employees to whom we mention with reference.

The second resolution, we numbered Resolution number two, from Charleston County, this is in regard to insurance benefits, "The Committee approves the intent of the Resolution and recommends the appointment of a special study committee to investigate and recommend appropriate action at the next annual meeting of the South Carolina Medical Association." (Passed)

Dr. Atwill: The next is a resolution of the Columbia Medical Society regarding Medicaid fees. "The Committee approves the intent of this resolution to establish a professional review committee and recommends reference of this matter to Council for action." (Passed)



The next resolution, we entitled Resolution No. 3—Charleston County, I had better read the Resolution portion: "Be it resolved that the South Carolina Medical Association at its annual convention in May, 1969, commends and supports the words and actions of the Governor of South Carolina and the Mayor of the City of Charleston with respect to administration in their recent management and control of the demonstrations and violence related to the attempt of some in Charleston to unionize hospital workers at the state and county hospitals.

This is the first part of the resolution and, I think for clarification, we hesitate here for just a moment. Back in the "Whereas," the fifth paragraph, the resolution was originally proposed "The time for South Carolinians and for all Americans to resist the subversion of our Republic by racial agitators and promoters of violence whose political motives are dubious and suspect . . .".

Your committee recommends the extraction of the word "racial" so that it will then read, "to resist the subversion of our Republic by agitators and promoters of violence whose political motives are dubious and suspect."

The second portion of that resolution would be adjusted to read, or it presently reads, "the Medical Association supports and commends the Governor of South Carolina and the State Legislature in their steadfast refusal to recognize any union of public employees of this State." That phrase, "refusal to recognize any union of public employees" by the committee has been changed to read, ". . . and commends the Governor of South Carolina and the State Legislature in the judicious manner in which they have dealt with the serious threat to the tranquility of our State."

So this resolution is offered with the removal of the word "racial" and that reference to opposition of this Association to the unionization of public employees has been deleted and instead the Governor and the State Legislature are commended and supported for the manner in which they have handled the threatened tranquility of our state.

The committee as a whole recommends the adoption of this resolution.

The Chair: Is there any discussion?

(A lengthy discussion followed)

The Chair: Now we have an amendment offered, gentlemen, to the report of the committee Chairman. The question now is on the adoption of the amendment and I will ask now again the chairman of this committee if he would again read the changes and explain to you the changes as they are again. This will be so that we all can understand them.

Dr. Atwill: Mr. President, I presume what you would like for me to read is the resolution as originally written and then the recommended change. Is this correct?

The Chair: Correct.



Dr. William Perry Reports

Dr. Atwill: The second portion of the resolution, original, "That the South Carolina Medical Association supports and commends the Governor of South Carolina and the State Legislature—thereafter the changes occur—this is the original—in their steadfast refusal to recognize any union of public employees of this state." That is the resolution as proposed. The changes begin at the same point, after "State Legislature in the judicious manner in which they have dealt with this serious threat to the tranquility of our State."

Dr. Eaddy: I just would like for it to be known that I support the stand of the reference committee because I think that it is sufficient to take on the people we are already dealing with and not get in a fight with the labor unions anymore than we can help. I also go along with the recommendation of the reference committee.

The Chair: Thank you. Is there further discussion.

Dr. DuBose, Columbia, (Recognized): My sympathy is with Dr. McIver, but realizing the facility of the newspapers to distort things, I think we should be very careful about using the word "union" at all.

The Chair: Further discussion, gentlemen? (None). Are you ready for the question? Now you are voting on the adoption of Dr. McIver's amendment. I want you to understand this.

(Dr. McIver's amendment was lost. The resolution with changes as recommended by the reference Committee passed.)

Dr. Atwill (continuing with his report): Mr. Chairman, the next resolution is from the Columbia Medical Society on osteopathy. I think that here again your reference committee changed the intent and dealing with the same topic but nevertheless it has come out with the resolution which is some-

what different. Therefore, I would like to read the original resolution. "RESOLVED, that the House of Delegates of the South Carolina Medical Association recommend to Council that the state Medical Association actively oppose the osteopathic bill now before the Legislature and request an open hearing before the Medical Affairs Committee of the Senate."

Your reference committee makes the resolution as follows: "Recognizing that the situation in reference to osteopathy has changed since the special meeting of the House of Delegates in March, 1969, in that these bills have been passed by the South Carolina House of Representatives and presently lie in the Senate Committee on Medical Affairs, then be it,

Resolved, that the South Carolina Medical Association, through a newly constituted special committee, to be appointed by Council, steadfastly oppose in principle the recognition of osteopathy; but make further efforts to obtain through negotiation with the South Carolina General Assembly and its appropriate committees a solution which will be in the best possible interest of the people of South Carolina."

Dr. Tucker Weston, Columbia: I presented this to Council originally to be presented to the Convention, and I believe that this would be the solution that we should seek this morning in passing what this committee recommends and I also believe that we should leave it to this committee's and Council's discretion and not get into a big open discussion on it, the subject on the floor this morning. (Applause).

(The Chair now declared the meeting in Executive Session.)

Dr. Atwill (Continuing): Mr. Chairman, one final remark and we will conclude the final report of this committee.

I would just like to say that the committee, and all those who met with the committee, worked long and hard and one of the primary things that I think is important to get across to the entire profession is the willingness of this newly constituted committee on which we have just voted. It needs the support of medicine—individually, collectively, and in large numbers. This is going to be most important if we are going to try to accomplish any type of activity, whether in the Halls of the General Assembly, that we do attend and show that we are interested by our presence. This is the conclusion of our committee report and thank you, Mr. Chairman. (Applause.)

The Chair: Thank you very much, doctor.

I am now turning the chair back to Dr. Weston for the report of Public and Industrial Health. Dr. A. H. Hursey is Chairman.

Dr. A. H. Hursey, Darlington: Report of Public and Industrial Health Reference Committee. The meeting was called to order at 3:10 p.m. Monday, May 12, 1969, by Chairman Dr. Andrew H. Hursey.

The following members were present: Dr. Frederick E. Nigels, Dr. Payne, Dr. Hugh H. DuBose and Dr. John B. Martin, Jr.

The report of the Industrial Medicine Committee as submitted by its secretary, Dr. Dexter M. Evans was accepted as information.

The report from the Committee on Mental Retardation of April 12, 1969, as submitted by its Chairman, Dr. B. Owen Ravenel, was accepted as information.

Under new business, the motion proposed by Dr. E. DuBose Dent Jr., as the Chairman of the South Carolina Society of Pathologists dated May 2, 1969, was accepted.

The Chair: Would you give them the resolution so that they will know what the vote is.

Dr. Hursey: (Reading) "Therefore: Be it Resolved by the South Carolina Society of Pathologists, in ordinary session assembled May 2, 1969, that this Society

(1) reaffirms medicine's traditional opposition to the practice of medicine by lay corporations, and to solicitation, and to commercial advertising of the practice of medicine, and

(2) respectfully requests Council to the South Carolina Medical Association to recommend to the House of Delegates of the South Carolina Medical Association that they oppose this new AMA Trustee policy, and

(3) requests the House of Delegates to the South Carolina Medical Association to call on the South Carolina Delegation to AMA to reverse this Trustee policy to the July AMA Convention in New York City."

Dr. Hursey (continuing): The report submitted by Dr. Patton concerning cancer was accepted and passed. This was the motion:

(Reading): "Be it resolved that the Medical Association of South Carolina fully endorses the work of the American Cancer Society, South Carolina Division, Inc., and its several county units, and commends the corps of volunteer Crusaders in their annual April Education-Funds Crusade to prevent needless suffering and untimely deaths caused by cancer and urges every adult to heed the advice of the American Cancer Society to have an annual and adequate cancer detection examination and learn the early signs and symptoms of possible cancer." (Passed unanimously.)

Dr. Hursey Continuing: The report of the Executive Committee of the State Board of Health as published in the South Carolina Medical Association Journal was accepted as information and motion was made and passed that we accept this report. (Passed unanimously.)

Dr. Hursey (Continuing): The report of the Industrial Medicine Committee which has been published in the same journal was likewise accepted as information and a motion was made and passed that we accept their report. (Passed unanimously.)

Dr. Hursey: The last item of business was a

resolution concerning the State Board of Health and this was passed unanimously. I will read this resolution concerning the State Board of Health:

Resolution

Recognizing that optimal health is desired by all;

Recognizing that the productivity and economy of the State is dependent upon the health of its citizenry;

Recognizing that the responsibility for the health of the citizens of the State is the responsibility of the physicians within the State;

And further recognizing just as individual physicians cannot abrogate their responsibility to their patients, likewise the SCMA cannot abrogate its responsibility for the health of the collective body of citizens in the State;

Therefore, be it resolved, that the House of Delegates of the SCMA as individuals and as a collective body of practicing physicians notify the Governor, the Members of the General Assembly, and all citizens of the State that the physicians comprising the SCMA are aware of their responsibility for the health of the citizens of the State, and request that should legislative change in the composition of the Board of Health be introduced, that the proposed Board of Health or proposed Board of Public Health and Social Service have adequate representation by the medical profession to the extent that no less than one-half of its membership be composed of physicians practicing within the state."

Dr. DuBose: I was on this committee, and I thought that it said "physicians in private practice." If I am wrong, I will withdraw this. I thought that was what we asked, physicians in private practice.

Dr. Hursey: I will ask Dr. Nigels, another committee member to help us with this.

Dr. Nigels: Hugh, I don't remember the point made strongly enough to state that this was a particular point here, the idea being that we felt it essential that physicians certainly, those from this State, should be a part of this organization, if the Board is to be in this State. But otherwise, I don't remember that.

Dr. E. Mims Mobley, Greenwood: Mr. Chairman, at a recent meeting of the State Society of Internal Medicine, we discussed the same type of thing and it was brought to our attention that most of the individuals who advise the Governor with respect to medical affairs are individuals who do not come from the private sector of medical practice. These are people from the State Health Department, the State Mental Health Institution, et cetera. We decided at this meeting that the Governor should be advised of these facts and our displeasure. So I feel that this resolution certainly should state that this representation on this new Board of Health, or whatever it is to be called, should be from the private sector of medical prac-



Dr. Benjamin Miller, President-elect

tice, and not merely from physicians who are practicing in the State, because certainly a state-employed physician is practicing.

The Chair: Are you making that as an amendment to the motion?

Dr. DuBose: Yes sir, if that would be what would be in order.

Doctor from Ninth District: I would like to ask a question. If you are employed by the state once a week or once a month, then you are an employee of the state and not a private practitioner. It looks like to me we are getting this thing down too closely and although I feel that I represent the private practice of medicine, I think there should be some compromise here that all of these members should not have to come from the private practice. We are being a little stubborn here requesting this.

Doctor from Fifth District: I would like to change the amendment to read "self-employed" physician instead of "private" physician.

Dr. Stone: I was going to make an amendment that these private practicing or self-employed physicians that are going to be on this would be continued to be recommended through the Governor by the House of Delegates rather than the Governor just having a free hand in appointing them.

Dr. Michael F. Patton, Spartanburg, (Recognized): I would like to change the motion both words, "private" or self-employed physicians.

The Chair: The amendment before the House is that these physicians be recommended and endorsed by the South Carolina Medical Association. (Vote taken and passed unanimously.)

Dr. Wyman: I would like to thank Dr. Hursey because he took over upon notice that the original chairman was ill and could not attend and he certainly did a fine job. We certainly thank you and your committee.

Dr. William H. Hunter: Your reference committee on Constitution and By-Laws consisting of myself,

Dr. Daggett Royals of Greenville; Dr. Forde A. McIver, Charleston, Dr. Joe Freed of Columbia, and Dr. George Smith of Easley, met yesterday and considered three items passed on to us by the House.

We have one change in the Constitution. We will present it to you today, not for a vote; it will lie on the table for a year, then the County Societies will have this at least two months prior to our next annual session at which time, this will have to be passed by a two-thirds vote. That change or addition to the Constitution, Article 5, Section One, of the Constitution, reads:

"The House of Delegates shall be the legislative and policy making body of the Association consists of (1) Delegates, selected by component Society. (2) Councillors, (3) President, President-Elect, Vice President, Secretary, Treasurer, if he is a member of the Association. (4) All Past Presidents of the Association with legal residence in South Carolina. (5) The Chairman of the Executive Committee of the State Board of Health. (6) The Chairman of the State Board of Medical Examiners. (7) The Delegates to the American Medical Association."

Your reference committee added "(8) The President of the Medical College of South Carolina, provided he is a member of the South Carolina Medical Association."

Dr. Hunter: The next change is a change in By-Laws. This does not lie on the table for a year.

Now we have under consideration, a resolution of Council asking for a full-time employee, and we have a resolution from the Columbia Medical Society asking for more help, this to include more public relations. We grouped these together. What all this amounted to, was an increase in the dues, in the amount and manner which it can be done. As you know, Council handles the distribution of funds. So we do not undertake anything about the distribution of funds other than just to change the by-laws concerning the money that it is thought will be necessary.

"Chapter X of the By-Laws: The annual dues of members of this Association shall be \$75.00, this of course, is the change from \$45.00, of which \$3.00, (this is no change), shall be for subscription to the Journal of the Association, and \$5.00 per member shall be set aside in a fund for a permanent building program (this is no change), to be used at the discretion of Council in the future. The dues for members who join the Association on or before July first shall be one-half, so we changed half of \$45.00 to half of \$75.00, which would be \$37.50 for the remainder of the calendar year, and \$1.50 of such dues for a portion of an initial year of six months or less shall be for a subscription to the Journal of the Association."

(Passed unanimously.)

The Chair: Our next committee is Insurance, Blue Cross-Blue Shield, Dr. Robert C. Brownlee, Jr.,



New SCMA Officials

Chairman. Dr. Weston, will you take the chair, please.

Dr. Brownlee: Mr. Chairman, the Reference Committee on Insurance, Blue Cross-Blue Shield met on May 12, 1969, at 3 o'clock P.M. with Dr. Robert C. Brownlee, Jr., Chairman, and doctors attending were C. J. Lemmon, Jr., Joseph J. Sylvester, J. Hertz Warren, Jr., and William A. Klauber.

The resolution from the Charleston County Medical Society relative to the By-Laws of Blue Shield was given to our committee but had been acted on during the Annual Meeting of the Blue-Shield Corporation, and therefore, did not require action by our Committee.

The resolution from the Charleston County Medical Society relative to "Coordination of Benefits" was reviewed and discussions heard. It was the feeling of this Committee that "Coordination of Benefits" has to be accepted as a fact of life of the Insurance Industry and that revocation of this policy might well lead to more utilization and eventual increase of premiums and therefore is not wise. It is our recommendation that this resolution be accepted as information only. (Passed)

Dr. Brownlee: The resolution from the Greenville County Medical Society relative to the Blue Shield's Participating Physician Agreement was considered by the Committee and discussions heard.

The Committee feels that the South Carolina Medical Association through its House of Delegates constitute the members of the corporate body of Blue Shield and are, therefore, its owners, and that as such, we should not take any action to make difficult the efficient operation of the corporation.

It is felt that the current participating Physicians Agreement does not work any hardship on the physician and does improve the operation of Blue-Shield and we recommend that this resolution be disapproved.

Dr. Brownlee: "We the Greenville County Medical Society instruct its representatives to register a protest against the use of the method of payment of benefits as coercion to become 'participating physicians.' Furthermore that the physician be given a choice of the method of payment; that is, to the physician or to the patient by incorporating an assignment of benefits clause in the insurance forms used by the Blue Shield and/or co-endorse-

ment of checks made payable to the claimant by Blue Shield."

Dr. Brownlee: Mr. Chairman, I move that this report be accepted.

The Chair: Thank you, Dr. Brownlee. And thanks to your Committee for all their hard work.

Dr. Robert E. Livingston, Jr: The committee met, and members present were Dr. Robertson, Dr. Browne, Dr. Hopkins, Dr. McLean and Dr. Douglas, and myself.

The committee endorsed whole-heartedly the proposed establishment of a family practice training program at the Medical College of the State of South Carolina. (Passed unanimously.)

The committee acted favorably on the South Carolina Medical Association providing a placement service for the physicians of the State. (Passed unanimously.)

The Committee received reports from the Committee on Medical Education, Committee on Eye Bank, Committee on Alcohol and Drug Addiction, and the Committee on Medical Aspects of Sports. Also the Committee received reports from the State Board of Medical Examiners and from the South Carolina Medical Advisory Committee to the

Selective Service, and the Annual Report of the Medical Advisory Committee to the South Carolina Vocational Rehabilitation Department, and these reports were received as information.

The committee re-worded and changed the resolution on Sex Education that was presented by Dr. Parker to the group, to say that we favor some degree of sex education, controlled at the local school level. We also oppose some of the programs in use in some schools that we were told about. (Passed unanimously.)

The election of officers ensued with the following results:

Benjamin Miller, President-elect

J. Anthony White, Vice-President

Strother Pope, secretary

Howard Stokes, treasurer

John Hawk, delegate to AMA

C. Tucker Weston, alternate delegate to AMA

Councillors: A. R. Johnston, Michael Holmes, William Klauber, Donald Kilgore.

A list of members elected to committees appears elsewhere in this Journal.

During the balloting, Myrtle Beach was decided on as the location for the 1972 Annual Meeting.

50 YEARS AGO



October 1919

An account of the difficulties of Dr. Covington Lee appeared. Dr. Lee had been arrested on the charge of murder in connection with the death of one of his patients. It appeared that the doctor had been practicing without a license for some time and that efforts to secure an injunction against him by the Association had been unsuccessful. The results were not specified.

Dr. T. M. Davis of Greenville published a paper on "Pyelitis."

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IN MEMORIAM

Mr. President:

Members and Guests:

I should like to introduce this memorial by quoting the last verse of "Thanatopsis."

"So live, that when thy summons comes to join
The innumerable caravan which moves
To that mysterious realm where each shall take
His chambers in the silent halls of death,
Thou go not, like the quarry-slave at night,
Scourged to his dungeon; but, sustained and soothed
By an unfaltering trust, approach thy grave,
Like one who wraps the drapery of his couch
About him, and lies down to pleasant dreams."

Since our last meeting, thirty-six of our colleagues have answered that summons.

They are Doctors:

Lang Weathersbee Anderson
John Charles Barnett
Louis Birch
Theodore George Bernthal
William Thomas Brockman
Clyde Russell Brown
Olin Burnham Chamberlain
Electa W. Carrier Cook
George Wilson Cullum
Alexander Peru Duff
Frederick Douglas Dudley
James Franklin Dusenberry
Clarence E. Elgin
Clay Welborn Evatt
Franklin Clayton Fetter
Louis Elwood Fitzsimons
Thomas Carlyle Hankins
Robert Malcolm

Elias Walter Masters
Henry Burwell Marrow, Jr.
Edward Bryan Michaux
Thomas Mellichampe Moore
Robert Kesterson Myers
James Marshall Neil
James Carl Pepper
Richard Robert Prentiss
Milton Jacob Schreiber
Abraham Silver
Matthew Steinberg
Ingram Carpenter Taylor
George Madison Truluck
William Brien Ward
Paul Cleveland Wheeler
William E. White
James Rogers Young
Francis Eugene Zemp

"Now they lie down with patriarchs of the Infant world—
with kings, The powerful of the earth—the wise, the good,
Fair forms, and hoary seers of ages past . . ."

May they rest in peace and in the memories of their fellowmen.

J. R. Sosnowski, M.D., Chairman



Dr. Edgar Pund of Seneca has been made an honorary member of the Oconee County Medical Society. **Dr. William S. Hall**, South Carolina commissioner of mental health, was recently installed as chairman-elect of the Psychiatric Hospital Section of the American Hospital Assn. **Dr. Elmer Eugene Pautler**, director of the laboratory at Mercy Hospital, Charlotte, has resigned to accept a post as pathologist at Orangeburg Regional Hospital. **Dr. Kenneth W. Smith**, a son of **Dr. Paul Smith** of Walhalla, has opened an office in Anderson for the practice of dermatology. He is a graduate of the Medical University of S. C. **Dr. Layton McCurdy**, chairman of the department of Psychiatry, Medical University of S. C., has been included in the 1969 edition of Outstanding Young Men of America. **Dr. Albert L. Reid** has opened offices at 226 Hampton St., Columbia, as an associate of **Dr. C. O. Spann** for the practice of general surgery. He was graduated from Meharry College of Medicine, Nashville.

Dr. James H. Blair has associated with **Drs. Herbert M. Black, W. M. Bryan Jr., James F. Williamson** and **Ronald Dew** in the practice of obstetrics and gynecology at 1433 Gregg St., Columbia. **Dr. Blair** has been in private practice with a clinic in Georgia for the past two years. **Dr. Jefferson Davis**, recently retired Navy Medical Corps captain, has moved to Myrtle Beach and opened an office at 7722 N. Kings Highway for the practice of otolaryngology. **Dr. Jim Carpenter** of Alabama has joined the staff of Memorial Clinic, Seneca, as general practitioner. He is a graduate of Tulane Medical School. Newly elected members of the Health Advisory Council to the Technical Education Commission include **Dr. Sidney Alston,**

Dr. L. J. Dodd, Dr. J. C. Hedden, and Dr. Loren Parmley, The York County delegation has appointed **Dr. Allen D. Edwards** and **Dr. Max A. Culp** to the Tri-County Mental Health Unit board. **Dr. Louis D. Wright Jr.** of Florence has been appointed a member of the State Advisory Committee to the S. C. Regional Medical Program. **Dr. W. McGill Woodward** has been appointed medical director of the Riverside Geriatric and Convalescent Center in Charleston.

Dr. John A. Wells Jr. has announced the opening of his office for the practice of ophthalmology at 1516 Gregg St., Columbia, in association with **Dr. L. W. Blackmon**. **Dr. Wells** was graduated from the Medical University of S. C. **Dr. L. E. Priester Jr.** has been named chief of the State Board of Health's Environmental Health Laboratories. He succeeds **Dr. Hubert J. Webb**, who has become associate director of the S. C. Pollution Control Authority. **Dr. Vernon Jeffords** of Spartanburg was recently honored by the Sunrise Civitan Club. **Dr. Marion Carr Jr.** has been elected president of the Medical Staff of the Lower Florence County Hospital. **Dr. H. L. Singletary** was elected secretary-treasurer. Other officers include **Dr. Marion Fowler**, a member of the Executive Committee; **Dr. D. M. Evans Jr.**, chief of surgery and **Dr. J. D. Whitehead**, chief of medicine. **Dr. Ralph S. Owings Jr.** has opened an office for the practice of orthopedic surgery in partnership with **Dr. David E. Holler** at 2753 Laurel St., Columbia. He received his M.D. degree from Tulane University.

Dr. John C. Dunlap has announced the opening of his office for the practice of adolescent psychiatry at 1614 Two Notch Road, Columbia. **Dr. Willard B. Mills** of

Greenville has been elected a vice president of Liberty Life Insurance Co. He is also medical director and a member of the board of directors of the company. **Dr. Herman Denny** of Bishopville presided at the September meeting of the Seventh District Medical Assn. On the program were **Dr. Harry B. Gregorie Jr.** and **Dr.**

Allen Johnson, both of Charleston. **Dr. Colquitt Sims Jr.** presided at the Annual Meeting of the S. C. Pediatric Society held at Hilton Head. Newly elected officers include: **Dr. Robert W. Gibbes**, president; **Dr. Harold P. Jackson**, vice president and **Dr. George Mc F. Mood**, secretary-treasurer.

The South Carolina Medical Association, in cooperation with the AMA is co-sponsoring a program of seminars and a lecture in nutrition in four universities in South Carolina during this academic year.

Dr. George Christakis, associate dean, professor of Community Medicine at the Mount Sinai School of Medicine in New York, will speak on "The Emerging Art and Science of Clinical Nutrition" at Clemson University on Tuesday, November, 18, 1969.

Dr. George Graham, professor of nutrition, department of International Health at Johns Hopkins University School of Hygiene and Public Health, will speak at Furman University Monday, November 3; Winthrop College on November 4. An address at the University of South Carolina, Columbia, has also been scheduled.

MEETINGS

The South Carolina Chapter of the American Academy of General Practice will hold its Annual Scientific Assembly November 12-14 at the Wade Hampton Hotel in Columbia.

The AMA will hold its 23rd Clinical Convention in Denver, November 30 through Dec. 3.

The Southern Chapter of the American College of Chest Physicians will hold its annual Scientific Session on November

10 at the Regency Hyatt House, Atlanta, Ga. Basic information on the principles of circulation and respiration and the application of this information to patient care will be provided.

Specialists in internal medicine from North Carolina will hold a scientific meeting in Winston-Salem October 30-November 2, under the auspices of the American College of Physicians.

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AN AID TO REDUCING THE DEATH RATE FROM PREMATUREITY

L. J. ARP, Ph.D.*

An eight year research and development effort, announced by the Virginia Polytechnic Institute (V.P.I.) of Blacksburg, Virginia, has achieved the first significant and dramatic reduction in the newborn mortality rate in more than twenty years.^{1,2} A new infant respirator and special nursery procedures were used in a two year clinical trial involving 200 infants who were all in respiratory distress at the Roanoke Memorial Hospitals, Roanoke, Virginia.

In the United States, the survival rate for infants weighing no more than 1,500 grams (3 pounds and 5 ounces) has been about 29.3%,³ and infants weighing no more than 1,000 grams (2 pounds and 3 ounces) have had only a 10 to 15% survival rate.³ In striking contrast to these past figures which included well infants without respiratory distress, a survival rate of 46.3% has been achieved for all infants in respiratory distress weighing no more than 1,500 grams.² Likewise, the survival rate in this study with all infants in respiratory distress weighing no more than 1,000 grams was 31.6%.²

The new Arp Infant Respirator will be available from Ohio Medical Products in Madison, Wisconsin, early next year. Between now and then, however, many infants in respiratory distress may die because this equipment will not be available. In an effort to make the existing equipment at the Roanoke Memorial Hospitals

available immediately to physicians and the distressed infants, a *cost free* flying intensive care nursery has been made available by V.P.I.⁴ This service will continue until the equipment becomes available commercially.



The University has provided a twin engine Beechcraft airplane equipped with an Armstrong Servo-Control incubator, oxygen supplies, a C.M.L. power inverter, a Tektronic physiological monitor and the new infant respirator. This unit, with a physician and technician, will respond to a request from a physician within a 500 mile radius of Blacksburg, Virginia, to transport an infant in respiratory distress, without cost, to the Roanoke Memorial Hospitals' intensive care nursery.⁴

The respirator in the airplane provides the infant with respiratory support during the flight from the pick-up point to the Roanoke Airport. A second completely portable respiratory support unit in a Roanoke Memorial Hospital ambulance continues the uninterrupted respiratory assistance for the infant from the airport,

*Correspondent: Dr. Arp is Professor of Industrial Engineering at Virginia Polytechnic Institute, Blacksburg, Virginia 24061.

to and through the hospital, and into the intensive care nursery. In this way, critical respiratory assistance is started at the earliest time possible and continues during the entire course of the infant's transfer.

Why Bother—Nothing Can Be Done Syndrome

In the past, the "why bother—nothing can be done syndrome" may have been a cruel and unchangeable fact of life. However, in this post Apollo 11 era, a space age comparison may now be in order. Last year man could not land on the moon and return safely. This year he did it. Likewise, last year many physicians were forced to watch newborns struggle for their lives and in about half of the cases to watch helplessly as their agonal decline ended in death. This year, however, the death rate from prematurity and respiratory distress can be cut in half with no additional cost or effort for the physician or the family.

The free air-ground transport service can be obtained any time of the day or night by calling Dr. L. J. Arp, Area Code 703-552-6574 during regular office hours or Area Code 703-552-1162 after hours. If there is no answer, assistance may be obtained by calling Mr. R. E. Dillon, Area Code 703-552-2507.

Conclusions

It has been determined that the degree of success in reducing newborn infant morbidity and mortality by supplying respiratory assistance is directly related to the condition of the infant at the time he is provided that assistance.² The transfer is generally an exercise in utter futility if the referring physician delays in transferring the distressed infant until he is quite sure that the infant will not survive in the local nursery. The concept of the absolute necessity for an early transfer and immediate start of intensive and comprehensive support for the distressed infant is somewhat new. However, the last-ditch stand by a physician using oxygen and buffer therapy is not new and has been proved by great experience to be inadequate in many cases.³ No surgeon waits for a vermiform appendix to perforate before taking a patient into surgery. Likewise, the infant in respiratory distress has the best chance for survival if respiratory assistance is started immediately after the first clinical signs of trouble are observed.²

The integrated air-ground transport and support system described in this paper has been used successfully. Now that the hardware and support teams are available, the only obstacles remaining in the path leading toward a successful reduction of the newborn death rate are *indecision* and *delays*.

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Dr Purvis James Boatwright

Dr. Purvis James Boatwright, 64 formerly of Darlington, died August 19, 1969 at Baptist hospital in Columbia.

He was born in Darlington. He was educated at St. John's High School and the University of South Carolina where he played football. He attended the University of North Carolina and was graduated from the Medical College of South Carolina in 1930. After his internship at Bellevue Hospital in New York City, he practiced surgery at McLeod Infirmary in Florence.

In 1938, he moved to Orangeburg and joined the staff of Orangeburg Regional Hospital. He was a fellow of the American College of Surgeons and practiced his profession in Orangeburg for 17 years.

At the time of his death, he was director of professional surgery services at Crafts-Farrow State Hospital in Columbia. He was a member of Trinity Episcopal Church, the American Medical Association, South Carolina State Employees Association, S. C. Mental Health Association and the American Psychiatric Association.

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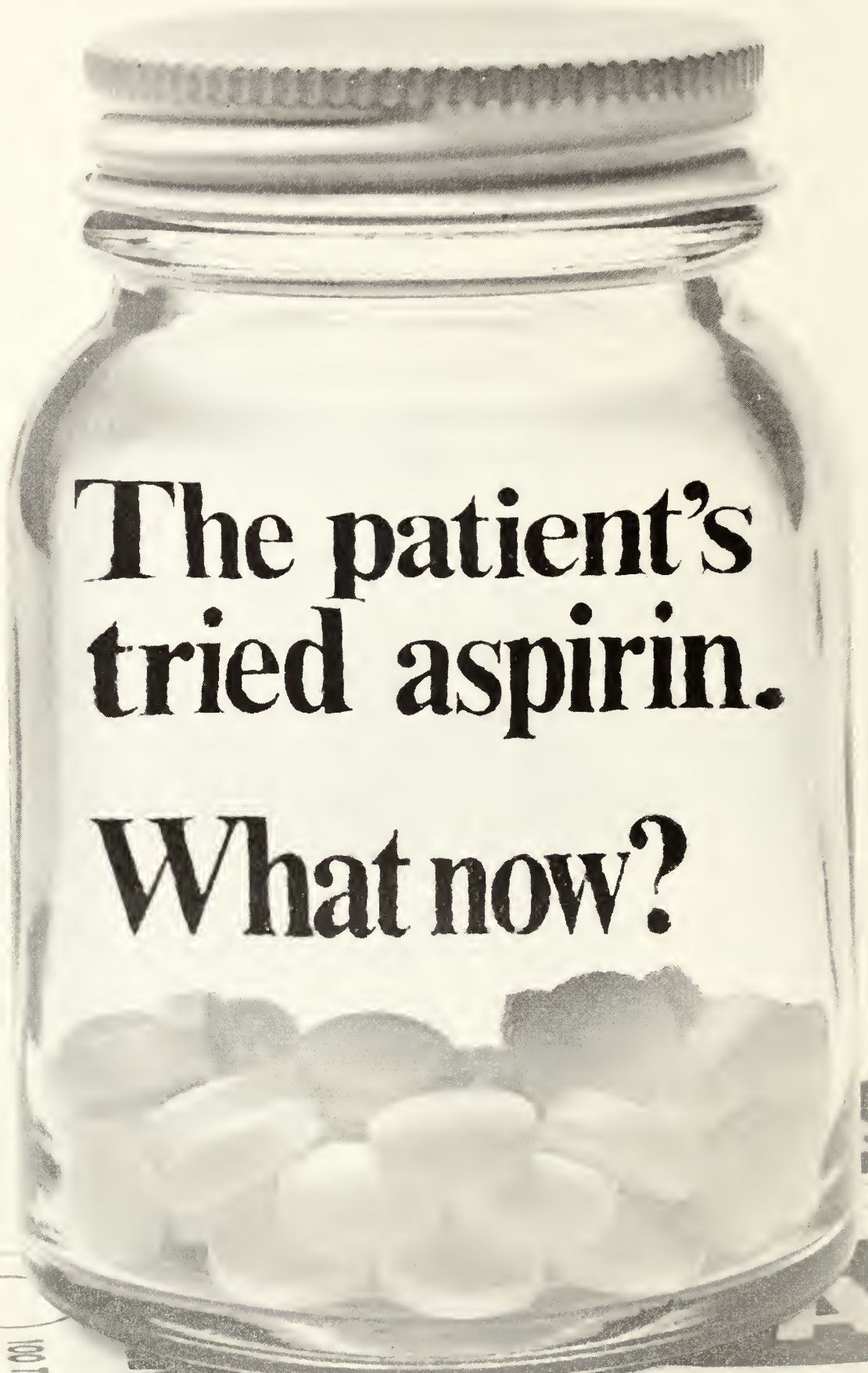
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NOVEMBER, 1969

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THE DESCRIPTIVE EPIDEMIOLOGY OF NATURALLY ACQUIRED RUBELLA IMMUNITY

JOHN F. FINKLEA
SARAH J. ROBINSON
WILLIAM WESTON III
S. HOPE SANDIFER

Naturally acquired rubella immunity soon will be obscured by immunity following vaccination with live attenuated rubella virus.¹ This report details age, sex, race, residence and temporal patterns of naturally acquired rubella immunity in 1968, four years after a major epidemic.² Rubella vaccination programs can best be planned when immunity patterns are understood.

Materials and Methods

Charleston, South Carolina, is an urban seaport located centrally in a county whose rural extremes stretch for over 100 miles along the Atlantic coast. Volunteers were recruited from neighborhood social organizations during a 1968 study of pesticide residues in blood. These 737 volunteers ranged in age from 3 months to

86 years and represented four race-residence strata.

Blood was obtained by venipuncture and centrifuged. Serum was separated and stored in sterile glass tubes at 4°C. Rubella hemagglutination-inhibition tests were performed as described by Halonen et al, but using the microtiter system.³ Rubella virus† and chick erythrocytes‡ were obtained commercially. A hemagglutination inhibition titer of 1:10 or greater was arbitrarily considered as evidence of immunity.

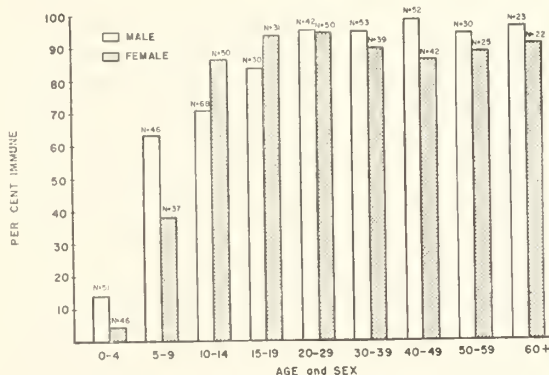


Figure 1

Rubella immune status of 737 Charleston County, South Carolina volunteers: distribution by age and sex.

From the Section of Preventive Medicine and the Department of Pediatrics of the Medical University of South Carolina and the Bureau of Laboratory Services and Research of the South Carolina Board of Health.

Aided by a grant from the Armour Company to the Medical University.

†Flow Laboratories, Rockville, Maryland

‡Microbiological Associates, Inc., Bethesda, Maryland

Test of hypotheses were performed using the chi square, partition of chi square or radit analysis procedures.⁴

Results

Age and sex: Rubella immunity in both sexes increased with age, as shown in figure 1. Less than 15 per cent of either sex was immune during the pre-school years. Immunity increased most rapidly during the elementary school years and finally attained an adult plateau with 90 to 95 per cent immune during the third decade of life. When the effects of age, race, and residence were controlled by partition of the chi square, rubella immunity did not differ significantly between the sexes. (Table 1)

Table 1

Testing Hypotheses About Rubella Immune Status Among 737 Charleston County, South Carolina Volunteers		
Hypotheses	Test	Interpretation
Rubella immunity is independent of age	$p < .0001^*$	Rubella immunity significantly increases with age
Rubella immunity is independent of sex	$p = .147^{**}$	Age adjusted rubella immunity does not significantly differ over the sexes
Rubella immunity is independent of race	$p = .0096^{**}$	Non-white age-adjusted rubella immunity significantly exceeds that of whites
Rubella immunity is independent of residence	$p = .0064^{**}$	Urban age-adjusted rubella immunity significantly exceeds rural
Hemagglutination inhibition titers among the immune are independent of age	$p < .05^{***}$	Hemagglutination inhibition titers among the immune significantly decline with age
*Chi Square		
**Partition of chi square		
***Ridit analysis		

Race: Whites and non-whites had similar age-immunity trends for rubella, as illustrated in figure 2. However, non-whites attained an adult immunity plateau with 90 to 95 per cent immune at

about age 15, almost 10 years sooner than whites. Moreover, rubella immunity among non-whites was shown to be significant by partitioning chi square to control age, sex, and residence. (Table 1)

Residence: Age immunity patterns for

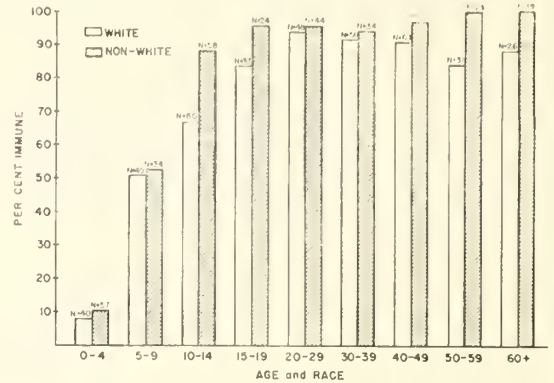


Figure 2

Rubella immune status of 737 Charleston County, South Carolina volunteers: distribution by age and race.

urban and rural neighborhoods are depicted in figure 3. Rubella immunity in both was similar in the pre-school years but differed in elementary and junior high school. During elementary school urban children exhibited a much more rapid increment in immunity than their rural counterparts who exhibited a more even immunity increase during the entire period. Both groups reached a similar adult immune plateau at the end of the second decade of life. Urban immunity

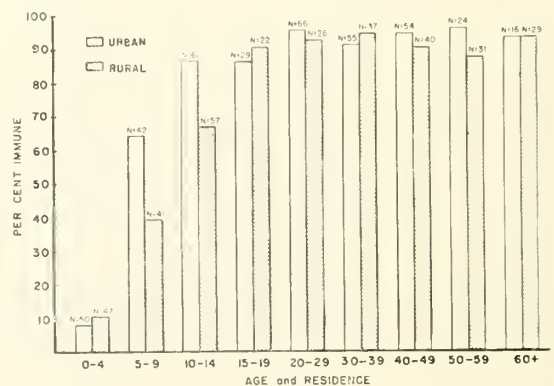


Figure 3

Rubella immune status of 737 Charleston County, South Carolina volunteers: distribution by age and residence.

was significantly greater than rural immunity when the effects of age, sex, and race were excluded by the partition of chi square. (Table 1)

Modelling rubella immunity: An inter-epidemic age immunity curve for South Carolina in 1968 was constructed after completion of analyses for age, race, sex, and residence specific rubella immune distributions to represent a South Carolina composed of 35 per cent urban whites, 15 per cent urban non-whites, 30 per cent rural whites and 20 per cent rural non-whites.

Next, similar models were constructed of rubella immunity just before and just after the 1964 rubella epidemic, i.e., a pre-epidemic model and a post-epidemic model. Initially, a model of maximum post-epidemic immunity was constructed assuming that no rubella cases occurred between the end of the 1964 epidemic and September, 1968. A model of minimum pre-epidemic immunity given maximum post-epidemic immunity was then constructed by assuming that no cases would occur for seven years after the post-epidemic curve. These three model curves for South Carolina rubella age-immunity are plotted in figure 4.

Another model of post-epidemic immunity that assumed a maximum credible harvest of rubella susceptibles since the 1964 epidemic was constructed. Similarly, a companion minimum pre-epidemic model was derived. The maximum credible harvest rate of rubella susceptibles was an observed 9 per cent for pre-school children. The latter harvest rate was computed by comparing two elementary schools, one of which was said to have been rubella-free since 1964 while the other experienced a rubella outbreak in 1968. This second post-epidemic curve differed from the first post-epidemic curve plotted in figure 4 in that immune rates were only 33 per cent for those 0-4 years and 62 per cent of those 5-10 years. After age 10 the two post-epidemic curves were almost identical. The second pre-epidemic curve also differed from the first pre-epidemic curve plotted in figure 4 in that significantly less immunity was predicted for the 5 to 9 and 10 to 14 year groups. After age 15 pre-epidemic models were almost identical.

Geometric mean titers: Rubella hemagglutination inhibition antibody titres of the 549 volunteers having a titer of 110 or greater were distributed by age and a geometric mean of the titer reciprocal was computed for each age group, as shown in figure 5. The geometric mean titer for those aged 0-4 was unreliable since only 9 individuals comprised this group. Geometric mean titers fell steadily from 173 at age 5 to 9 to only 63 in those 60 or older. The hemag-

glutination titer distribution for children aged 0 to 14 years was then established as a refer-

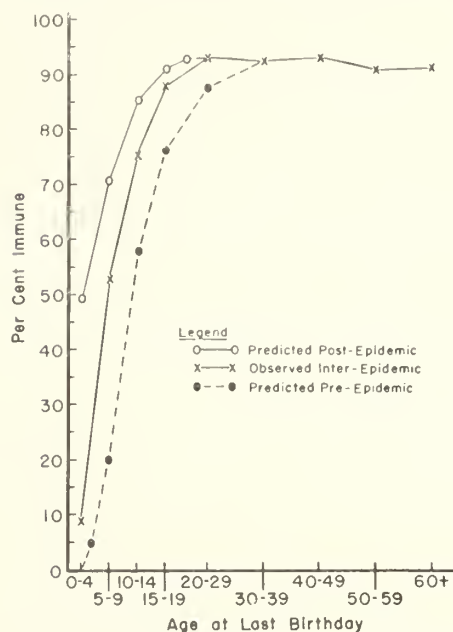


Figure 4
Post-epidemic, inter-epidemic, and pre-epidemic models of rubella age-immunity curves.

ence distribution. Titer distributions from each of the other age groups were compared to this reference by ridit analysis which showed that there was a significant reduction in titer with increasing age. (Table 1)

Discussion

Age immunity or age susceptibility curves for rubella have been reported for several populations.⁵⁻¹¹ However, these studies did not always include data which temporally related the age immunity curve to a known rubella epidemic.⁸⁻¹⁰ Furthermore, few published studies have included populations of pre-schoolers and adults older than 40 years.^{5-7,11} In each study, including the present one, rubella immunity has increased with age with the most rapid increment during the school years. Moreover, an adult immunity plateau of 85 to 95 per cent was usually obtained by age 20 to 30. In some island populations rubella immunity increased more slowly and adult immunity plateaus were reached when only 60 per cent were immune.^{9,11,12} The present study, like

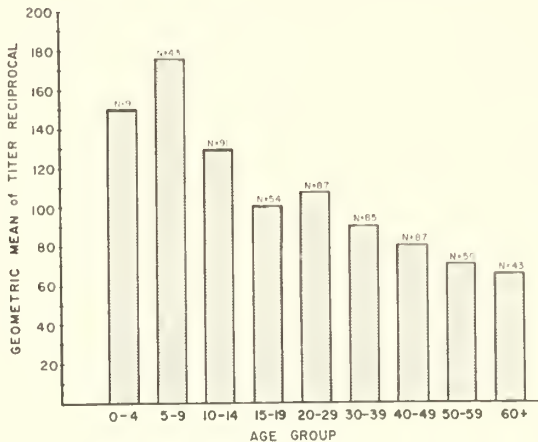


Figure 5

Geometric means of rubella hemagglutination inhibition antibody titers reciprocals among 549 immune Charleston County, South Carolina volunteers: distribution by age.

previous reports, revealed no significant sex differences in rubella immunity.^{5,6,11}

Apparent ethnic differences in reported rubella immunity may in reality have been caused by temporal, geographic or residence factors.^{9,11-13} Previous studies have yielded conflicting evidence concerning possible racial differences in rubella immunity in the United States. Sever et al first found significantly lower rubella immunity among pregnant urban Negroes when compared to pregnant urban Caucasians.¹³

In a later survey of pregnant women in Hawaii the same investigators found no significant ethnic differences.¹² Pitts et al found no racial effect upon rubella immunity on the Island of Trinidad where East Indians, who are Caucasians, and Negroes live side by side in similar socioeconomic circumstances.¹¹ The present report has shown that rubella immunity among Negroes significantly exceeded that for Caucasians in the same community after any effects of age, sex, and residence were eliminated. However, this apparent ethnic difference may only reflect greater crowding and consequent greater ease of rubella transmission in the Negro home.

Few authors have explored possible urban-rural differences in rubella immunity.¹¹ The present study revealed that urban immunity significantly exceeded rural immunity, confirming a finding made by Pitts et al.¹¹ However, urban-rural differences noted in the present study may have been due to differences in rubella experience since the 1964 epidemic. The authors have previously reported that serologically confirmed clinical rubella was present in urban Charleston during 1967 and 1968, with the 1968 outbreak primarily involving elementary school children.^{14,15} An increase in rubella immunity among school children was the principal urban-rural difference found in Charleston.

No previous models of rubella immunity over an entire hypothetical seven year cycle have been published. Modelling rubella immunity may be an interesting concept, but are the models in this paper valid? Previous independent clinical and serology studies in South Carolina provided an opportunity for testing the models.¹⁴⁻¹⁶ Unfortunately, this test data was limited to subjects age 13 to 22. Thus pre-epidemic, inter-epidemic and post-epidemic curves may be tested but no decision could be made regarding alternate assumptions in the two different post-epidemic models as these models differed only with reference to predicted immunity among children less than 10 years old.

Studies of rubella immunity in South Carolina prior to the 1964 epidemic revealed that 83.5 per cent of white college males aged 19 to 22 were rubella immune. The pre-epidemic model in figure 4 predicted that 82.2 per cent of such students would have been immune.^{14,15} This prediction was well within the computed 95 per cent confidence interval of 81.8 to 85.2 per cent for the observed point estimate of immunity.

Similarly, rubella immunity among entering white college students during the

three years following the 1964 epidemic was found to be 90.2 per cent for those 18 to 21 years old in 1966. The post-epidemic model curve of figure 4 predicted that 91.3 per cent of such an age group would be rubella immune. Again, this prediction was within the computed 95 per cent confidence interval of 88.7 to 91.7 per cent for the observed point estimate of immunity.

The inter-epidemic model curve was tested by two serological surveys.^{15,16} The first survey included 103 white males age 18, of whom 86 per cent were rubella immune as compared with a predicted 88.5 per cent immune. The other survey involved 1194 female high school students of both races ages 13 to 20. Among the 338 children, aged 13 or 14, 79 per cent were observed to be immune. The inter-epidemic model predicted that 78 per cent would be immune. In addition 856 students, aged 15 to 20, were observed to be 86.9 per cent immune compared with the predicted 88 per cent immunity. Each of these predicted estimates of rubella immunity fell within the 95 per cent confidence interval for the appropriate observed point estimate.

As previously noted, alternate models which utilized a minimum estimate of post-epidemic rubella immunity were also constructed. In an unpublished 1968 study of Danbury, Connecticut children, McCollum et al found that 26.2 per cent of children less than 3 years old were already rubella immune. This point estimate agrees well with a prediction of 30.5 per cent immune derived from the model which allowed for substantial inter-epidemic harvesting of rubella susceptibles.

All available data have indicated that the models of rubella immunity in figure 4 are valid. Present plans call for limiting live rubella virus vaccine programs to pre-pubertal school children and pre-school children older than one year of age.¹ Vaccination of adolescents has been given a low priority because of some in-

crease in illness after vaccination, the possibility of pregnancy, and the belief that almost all adolescents are rubella immune.¹ The models presented in this report show that only 60 to 80 per cent of post-pubertal adolescents will probably be rubella immune at the end of a seven year rubella epidemic cycle. Furthermore, rubella epidemics in semi-closed populations such as colleges have occurred when even 92 per cent of the student body was rubella immune.¹⁵ Moreover, rubella has been a significant morbidity problem in military recruits.¹⁷ Thus any decision regarding the inclusion of adolescents in a vaccine program should consider both position in the epidemic cycle and the activities of the particular adolescent population.

Hemagglutination inhibition antibody titers against rubella virus were shown to decrease significantly with increasing age in this study. Similar antibody titers did not decrease with age in a limited Trinidad study.¹¹ On the other hand, Given et al described a probable decrease in rubella neutralization antibody with aging.⁸ However, Meyer, et al found that intranasal challenge with live attenuated rubella virus (HPV-77) caused an anamnestic response in subjects with low pre-existing rubella hemagglutination inhibiting antibody.¹⁸ The present data did not support the concept of reinforcement of rubella hemagglutination inhibition antibody by anamnestic responses to multiple natural rubella infections. Rather, the waning of naturally acquired immunity may reflect decreasing immunologic competence.

Summary

Naturally acquired rubella immunity among 737 Charleston County, South Carolina, volunteers was significantly more frequent among urbanites, and Negroes, irrespective of sex. Rubella immunity rapidly increased from a low of 9 per cent in pre-school children to 92 per cent in young adults. Rubella age immunity curves for pre-epidemic, inter-

epidemic and post-epidemic periods were constructed and validated. Rubella hemagglutination inhibition antibody decreased

significantly with age; a geometric mean titer reciprocal of 173 at age 5 to 9 decreased steadily to 63 in those 60 or older.

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Rubella Immunization

Rubella vaccine is being made available in South Carolina this fall. It is the intention of the State Board of Health to encourage all parents to take children to their private physicians. Due to the economic resources of many of our citizens however, they suspect some will attend State Board of Health sponsored clinics.

The Board has studied the number of Title I children in the elementary schools in each county and are using this percentage to estimate economic status. They hope to begin campaigns in the areas where percentage of Title I children is highest. The majority of the state's physicians, therefore, will be able to see all their private patients in advance of health department clinics.

The clinics will be conducted in the schools. No children under the age of 1 or over the age of 10 will be included. Since rubella vaccine is a live virus, no other live virus vaccine should be given within one month. Standards set by the U. S. Public Health Service and with the approval of the Committee on Infant and Child Health of the South Carolina Medical Association, are recommended.

CLINICAL PATHOLOGICAL CONFERENCE

MEDICAL UNIVERSITY OF SOUTH CAROLINA TEACHING HOSPITALS

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Clinical Discussion

Dr. Louis Jervey: One of the features of a CPC is the fact that the patient has usually expired and this knowledge helps us to eliminate a number of possibilities, but today this is not the case.

This 63 year old Caucasian woman gave a past history of a basal cell carcinoma of her nose, of a subtotal thyroidectomy (she is currently euthyroid with a PBI of 4.4 mcg) and of a vaginal hysterectomy and A-P repair. I mention these events to dismiss them and to say that I think that they are not pertinent to her present illness. The next thing we learn is that she came in for a routine follow-up visit to the Cancer Clinic, not prompted by any particular symptoms. However, at this time she had lost 33 lbs. over the past five months and she had noted anorexia, weakness, and generalized lymphadenopathy. She had "shots for low blood." There was a history of arthritis for 14 years, migratory type, involving predominantly her knees, her back, and her hands. She specifically denied abdominal discomfort or disturbance of bowel function.

On examination she had pallor and generalized lymphadenopathy with remarkable lymph nodes measuring up to 2 cm in diameter. Her hemoglobin was 8 Gm and the laboratory work showed evidence of an iron deficiency anemia with serum iron level of 19.8 mcg and a reticulocyte

count of 0.4%. She had kyphoscoliosis by x-ray and a negative complete GI series and sigmoidoscopy. At this time biopsy of an inguinal node was performed and presumably did not show the specific findings of any disease entity. Inguinal node biopsies as a general rule are not preferred for they are so commonly colored by many inflammatory processes that the likelihood of getting a negative (or non specific) biopsy report is high, and perhaps this is what happened. At any rate, she was started on Gantrisin for reasons unknown to me, perhaps on suspicion of a urinary tract infection, as indicated by a few pus cells in the urine. She was also started on oral ferrous sulfate for obvious reasons. One month later her nodes were thought to be bigger but she was still relatively well. She weighed 133 pounds and had not lost weight. She was hospitalized at this time, not because she was sick, but because we got interested in her and wanted to find out more about her disease. She had a smooth tongue which suggests some deficiency disease. She had a 2 x 2 cm mass in the right breast, but mammograms were later negative. She had enlarged and tender distal interphalangeal joints of her hands, and her hemoglobin, lo and behold, had come up to 10 Gm, indicating perhaps that she was absorbing the iron that she was taking orally. Her fasting blood sugar was 122 mg/100 ml and her proteins were abnormal with al-

bumin 1.7, alpha globulin 1.20, beta globulin 1.1 and gamma globulin 3.67. The electrophoretic pattern showed a marked "polyclonal hypergammaglobulinemia with beta gamma bridging." One alkaline phosphatase report was 40.7 KAU, but others were normal. The BSP test showed slight retention (9% in 45 minutes) and other tests were negative. Biopsies of left axillary and left and right inguinal nodes were performed. She was again discharged on Feosol.

After another month this patient was still reasonably well and it is interesting that the nodes were less prominent to her and to her physicians. Her hemoglobin had increased to 11 Gm. Nine per cent eosinophils were noted on one differential count. Her sedimentation rate was only 3mm/hour and a second stool examination for blood showed only 1+ guaiac. Alkaline phosphatase was normal. Her physicians began a series of studies to evaluate her GI absorption. The glucose tolerance test showed a diabetic curve rather than the flat curve which I imagine the clinicians were looking for. This can be misleading in malabsorptive states, however, because the starvation which often accompanies malabsorption can produce false positive starvation-type glucose tolerance curves. The prothrombin time was 97% of normal, indicating probable normal absorption of the fat soluble vitamin K. Calcium and phosphorus were normal. Cholesterol, however, was reduced to 116 mg. Her serum iron was still only 46 mcg/100 ml—still low despite the fact that her hemoglobin had responded. Her iron binding capacity was elevated to 437 mcg, indicating again that we are dealing with an iron deficiency anemia. A D-xylose absorption test was done and was within normal limits. A Schilling test indicated normal vitamin B-12 absorption. Her proteins again showed hyperglobulinemia, but now her albumin was 3.44 Gm, which I believe to be closer to the correct figure.

And now a peroral small bowel biopsy was performed. I think at this moment we might pause and look at the x-ray findings with Dr. Pettit.

Dr. Pettit: On the chest films the lungs are clear. The heart is slightly but non-specifically enlarged. There is no mediastinal adenopathy. The GI series shows that the upper small bowel pattern is quite good, with very delicate folds and no evidence of edema. There is no irregularity, dilatation, or constriction of the lumen of the bowel. She has a transit time a little shorter than most.

Dr. Jervey: In analyzing the data in this protocol we have a relatively well woman with a history of arthritis, generalized discrete lymphadenopathy, weight loss, anemia, possible diabetes and hyperglobulinemia of a polyclonal type with beta bridging. In simple terms this means a general increase in all or many different immunoglobulin subclasses resulting in an increased concentration of various electrophoretically heterogeneous molecules within each group. Now, that's a lot clearer, isn't it? On paper this type of pattern gives a broad diffuse band often going into the beta or the alpha region. The second type of hyperglobulinemia, in contrast to the polyclonal variety, has a narrow band anywhere from the gamma to the alpha region and shows as a rather discrete peak referred to as an M component by some. It's interesting that Waldenstrom first suggested that these terms "monoclonal" and "polyclonal" be used, the implication being that in polyclonal gammopathy there are a number of different clones of plasma cells producing a variety of types of gamma globulin, resulting in a diffuse spread on electrophoresis, while with monoclonal gammopathy there is a single clone or relatively few clones of cells producing a relatively homogeneous type of protein which gives a smoother higher peak on the electrophoretic pattern. How does this help us? It helps us in that monoclonal gammo-

pathy is usually a result of neoplasia, either of plasma cells, reticulum cells, or of lymphocytes, while polyclonal gammopathy, the more common variety, is associated with chronic infections, cirrhosis of the liver, chronic hepatitis, collagen vascular disease and many, many other disease states, some of which I will mention in the differential diagnosis.

Let us consider the differential diagnosis in this patient. With the findings that have been mentioned, the first disease that came to my mind, and certainly the first that should come to your mind, is kala-azar. I see that the students didn't think of that. She had generalized lymphadenopathy and hypergammaglobulinemia. I excluded this disease by the absence of double quotidian fever, by the absence of splenomegaly, by the relative lack of aggressiveness of the local *Phlebotomus* fly and by the epidemiology of this disease considering the fact that this woman presumably had not traveled to any of the endemic areas of this protozoan infection.

The next infections which crossed my mind were tuberculous and mycotic infections, including such entities as nocardiosis, histoplasmosis and cryptococcosis. All of these infections usually appear primarily through the respiratory tract. All produce weight loss, anemia and increase in gamma globulins. All could produce polyclonal gammopathy. Generalized lymphadenopathy in the absence of other organ involvement would be unusual but can occur. Generalized lymphadenopathy without hepatic enlargement, without splenic enlargement and with no pulmonary findings would be a very unusual presentation for any of these infections. Furthermore, this woman seemed to be too well for disseminated tuberculous or mycotic infection and she had no history of fever.

The next diagnosis I considered was cirrhosis of the liver. In the review of the gamma globulins in the *New England Journal of Medicine*¹ in 1966, the authors

state that polyclonal gammopathy with beta bridging is most characteristic of cirrhosis of the liver. This disorder could account for this woman's gammopathy and her decreased albumin, but her course doesn't seem to be compatible with uncomplicated cirrhosis. I can't explain her generalized lymphadenopathy on this basis. Her BSP retention is minimal, and I tend to dismiss this diagnosis for other reasons to which I will refer later.

The next possibility is that of rheumatoid arthritis. This patient had had migratory arthritis. She has increased gamma globulins, she is anemic, and all of these findings are compatible. Generalized lymphadenopathy can occur in rheumatoid disease, but it is more commonly seen in childhood rheumatoid or Still's disease than in the adult form. This degree of lymphadenopathy would be unusual. Furthermore, this woman at the time of examination lacked the usual stigmata of rheumatoid involvement of her joints. She had no rheumatoid factor in her serum. Much the same reasoning would seem to exclude systemic lupus erythematosus. Furthermore, she had no polyserositis, no rash, no leukopenia, and an LE cell preparation was negative.

A little more difficult to exclude, however, is lymphoma, and I am certain that this possibility must have concerned the patient's clinicians. She could have lymphoma, in which case her joint disease would probably be unrelated and represent osteoarthritis. Iron deficiency anemia could be secondary to GI blood loss. Generalized lymph node enlargement in the absence of systemic toxic symptoms would make it more likely that she has lymphosarcoma or reticulum cell sarcoma rather than Hodgkin's disease. Furthermore, her albumin reduction could be due to a protein-losing gastroenteropathy that can occur with the lymphomas. Lymphomas can be diagnosed by jejunal biopsy, but again, this woman seemed awfully well to have had a rather advanced lymphosarcoma or

reticulum cell sarcoma. Her gammopathy is polyclonal rather than the monoclonal variety which we would expect if she had lymphoma.

I was at first convinced that she had Boeck's sarcoid. She had a sense of well-being, she wasn't particularly ill and these observations are noted in sarcoidosis even of advanced degree at times when there is not extensive pulmonary involvement. She had generalized lymphadenopathy. She also had arthritis, and arthritis is described with Boeck's sarcoid in Kaplan's review in the *Archives of Internal Medicine*, 1963.² He described three general types of arthritis with Boeck's: a migratory polyarthritis associated with fever, erythema nodosum and hilar lymphadenopathy; one or more bouts of polyarthritis or rarely recurring monoarticular arthritis; and finally, a persistent polyarticular or monoarticular arthritis which proceeds to joint deformity. Often the arthritis in Boeck's sarcoid precedes the onset of other manifestations of the disease by many, many years. Hypergammaglobulinemia has been commonly described with sarcoid, though recently some authors question this association and state that it is uncommon. The transient increase in alkaline phosphatase, the eosinophilia and the mild BSP retention are compatible, but sarcoid rarely involves the gastrointestinal tract, and I have come across no reports of jejunal biopsy showing the changes of sarcoid. Although it's possible they could occur, I rather doubt it because of the rarity of involvement of jejunum.

Now, in order to make a diagnosis in this patient, we must make the jump from scientific reasoning to intuitive reasoning. I think that this will carry us through the back door to a diagnosis in this particular patient. The key to the Chinese puzzle is the last sentence in the protocol: "A peroral small bowel biopsy was performed." At times what is *not said* in the protocol is more important than what *is* said. I would again call your attention to

the fact that studies here showed no malabsorption. No examination of this woman's stool was made for fat. No fat absorption studies were done. The absorption of fat is one of the more difficult processes in the GI tract and one of the first things that may go haywire in malabsorption. It might have been possible to do carotene studies, which show reduced values when there is difficulty with vitamin A absorption. Perhaps 5-hydroxyendolacetic acid excretion in the urine might have been helpful since tryptophan metabolism is abnormal and increased levels of the former may be found in malabsorptive states. Therefore, even though our tests do not show evidence of malabsorption, we have not tested sufficiently to exclude malabsorption in this woman.

The next assumption I shall make is that the clinicians involved with this case were as smart as I am—I believe that's probably a reasonable assumption. Good clinicians would hardly have done a small bowel biopsy on the strength of the data in this protocol. With no evidence of malabsorption and generalized lymphadenopathy, why would one stick a tube down and perform biopsy on the jejunum? There was no reason to do this procedure unless something else had suggested that this would be a profitable course to follow. That something must have been the lymph node biopsy. Something found in the lymph nodes suggested to the clinicians that they biopsy the small bowel in this particular patient. Now, had the nodes shown tuberculosis or a fungus infection there would have been no need for biopsy. Had the nodes shown lymphoma I doubt that anyone would have done a jejunal biopsy unless there was stronger evidence of protein-losing gastroenteropathy or malabsorption. Treatment would have been instituted with one of the appropriate drug regimens. Had the nodes shown sarcoid, I doubt that the physicians would have done a small bowel biopsy, since sarcoid so rarely involves

the small bowel. Therefore, I predict that the nodes showed macrophages laden with PAS-positive glycoprotein strongly suggestive of Whipple's disease, and further, I predict that the clinicians were as surprised as the pathologists by the findings.

There are many unusual things about this case, and the first place that I started, which is often a good place to start, was Whipple's original article in 1907 published in the *Bulletin of the Johns Hopkins Hospital*.³ Dr. Whipple's patient was a 36 year old physician, interestingly enough, who had had five and one-half years of migratory arthritis of intermittent type, intermittent fever, weight loss and cough before he ever developed his first gastrointestinal symptoms. He had mild generalized lymphadenopathy, a swollen tender left ankle and pigmentation which was thought at that time to be sunburn because it affected primarily the exposed areas. At autopsy typical changes were described but Whipple did not mention involvement of nodes other than the mesenteric lymph nodes. However, it is interesting that he described "minute comma-shaped black deposits," "others are rod-shaped," and he raised the question as to whether or not these might be bacteria and might be responsible for the evolution of the disease. The masterful clinician, Dr. Thayer, in discussing this case said, "As one looks back upon the history of this case in connection with the remarkable observations at autopsy, it is difficult to resist the conclusion that we are here dealing with a definite and hitherto unrecognized clinical picture with which we shall meet again."

The existence of arthritis and polyserositis for many years before the onset of GI symptoms has been described by other individuals, including Ruffin,⁴ Caravati,⁵ and others in reviews in the literature. They suggest that there is a silent intestinal defect for years before the onset of the last lap of the illness; when the GI manifestations became prominent

they usually represent a downward turn which may lead to death from malnutrition in a relatively short period of time. Puite and Tesluk⁶ in 1955 described migratory polyarthritis not unlike rheumatoid disease which had disappeared by the time of onset of the gastrointestinal symptoms. They also described eosinophilia, microcytic anemia and lymphadenopathy in 50% of the patients. They were the first to diagnose this disease by peripheral lymph node biopsy and suggested this route as being preferable to exploratory laparotomy, which to that time had been the usual means of diagnosing Whipple's. Ruffin⁴ in 1961, also suggested peripheral lymph node biopsy, but he stressed the fact that unless one did PAS stains on the nodes they could miss the diagnosis. I looked for observations concerning the absence of diarrhea and it is not as rare in the literature as one might expect. Ruffin in his series had two patients who never had diarrhea at any time during the entire course of their disease. The anemia can be microcytic due to iron deficiency. The latter may occur because of inability to absorb iron, or it may be due to an associated blood loss through the GI tract. Kyphosis has been described and is attributed to the protein wasting and compression of osteoporotic vertebrae. Considering the time sequence, I rather doubt that this patient's kyphosis was related, but it could have been.

Perhaps the most interesting studies in recent years concern the nature of the bacillary bodies and their etiologic and therapeutic implications in Whipple's disease. Yardley and Henrix⁷ in 1961 published the first electron microscopic and light microscopic description of these bodies. They noted that they were about the size of brucella, pasteurilla and bacteroides micro-organisms, strongly suggesting to them that they were bacteria. They suggested the possible infectious etiology, although they credited Whipple with the original suggestion. They thought

that these PAS-positive bodies represented the remnants of the cell walls of ingested micro-organisms that had been altered in some way by phagocytes. In 1960, England⁸ reported a patient who improved with tetracycline therapy and relapsed when tetracycline was discontinued. Since then a number of similar reports have appeared in the literature. Successful treatment with chloramphenicol has also been reported. It is surprising to me how small an amount of antibacterial agent produces remission in this disease.

Ashworth and his collaborators⁹ reported the disappearance of the bacilli-form bodies after tetracycline-induced remission. Serial jejunal biopsies in one case showed that before tetracycline, inclusion bodies were present, but that after tetracycline they had disappeared. There are also two interesting cases mentioned in one article which responded to nitrogen mustard therapy, and others which have responded to x-radiation of the abdominal lymph nodes. These observations raise provocative questions as to etiology and as to the mechanism of action of tetracycline in this disease. I have not seen it written, but I wonder if tetracycline is really acting as an antibacterial agent in this disease, or if it is acting upon the gastrointestinal cells as a protein-synthesis inhibitor in the same manner that it acts upon bacterial cells.

Finally, the proteinopathy is a bit unusual. With fullblown Whipple's disease there is usually hypoalbuminemia. The reason for this hypoalbuminemia is probably malabsorption, but some studies done with I¹³¹ polyvinylpyrrolidone have demonstrated protein-losing into the gastrointestinal tract in Whipple's disease. There is a report of elevation of alpha 2 and beta globulins. Probably this patient has been too well to date to develop much hypoalbuminemia. The polyclonal gammopathy does not seem unreasonable in this disease of unknown but possible infectious etiology although it does raise

the question as to whether or not she could have two diseases. Could this woman have both Whipple's disease and sarcoidosis? Preferring the unitarian approach, I will say that she does not have two diseases. My final diagnosis is Whipple's disease involving peripheral lymph nodes as well as small bowel and mesenteric nodes. This case, if it is Whipple's, is unusual in that we have caught the patient in an interval stage between polyserositis and full-blown malabsorption. Further detailed study of patients such as this might shed light upon the etiology of this unusual disorder.

Dr. Hennigar: Thank you, Dr. Jervey. The majority of students reporting felt that this was Whipple's disease and several considered it sarcoid. Dr. Legerton, would you be kind enough to tell us a little bit about your experiences with this patient?

Dr. Legerton: I saw this patient primarily for purposes of doing the small bowel peroral biopsy. Of the several patients that I have seen in the last ten or twelve years with Whipple's disease, the first one had to be diagnosed by exploratory laparotomy. The latter ones have been done by peroral biopsy. In regard to this patient, Dr. Jervey, don't you feel her anemia was probably on the basis of malabsorption?

Dr. Jervey: It could be; the response to oral iron bothered me. This woman showed a reasonably good response to oral iron therapy. It is possible that she had impaired iron absorption, but not a total block.

Dr. S. Richardson: Going into the lymph node biopsy, our clinical diagnosis was indeed sarcoidosis. The diminution in nodes between the two admissions was very striking and the patient got no antibiotics in between admissions. She also gained weight so we were reluctant to begin other therapy. I think that a word about iron and malabsorption is in order there. Probably these people don't have to

bleed. I think many of them probably do have positive stools. It is also likely that they may lose some iron simply on the basis of a rapid cell turnover in the small bowel. Certainly this seems to occur in some diseases like sprue. We do know that at least in the upper small bowel in normal people the mucosal cells are iron-containing so that such a patient may, if she has rapid cell turnover, lose more iron than she absorbs without having positive stools. Certainly an iron deficiency type of anemia is by far the commonest form seen with malabsorption syndromes. In many of these people it is difficult to demonstrate blood loss so that you do have to explain this on some basis.

Dr. Moseley: Dr. Jervoy's presentation is an excellent review of the disease most likely in this case. This would be a case of considerable interest if she is in remission solely on the basis of iron. I believe the plan is to follow her with nothing else, to see what the course of her disease might be. This may be a spontaneous remission. This would not be too unusual because certain individuals will, for reasons not clearly understood, recover spontaneously from a variety of infections. It is probable we clinicians haven't recognized enough of these patients with Whipple's disease in the various stages of this disorder to know how many go on to a progressive downhill course without antibiotics or how many may recover spontaneously. We ought also to bring out the fact that Whipple's is not the only disease that may initially present itself clinically as a disease quite similar to rheumatoid arthritis, but which later manifests profound gastrointestinal symptomatology. Crohn's disease, ulcerative colitis, and chronic amoebic colitis are in this category. The only case that I can recall having seen in which I strongly suspected Whipple's disease was twelve years ago. An elderly colored man with arthritis, pigmentation, severe diarrhea and wasting, however, was found to have a very

heavy infestation with *strongyloides stercoralis*, somewhat to our surprise. He, though, certainly had all of the symptoms that have been described in a severe case of Whipple's.

Pathological Discussion

Dr. Upshur: This is indeed an example of Whipple's disease. In his original case description Whipple reported almost all the symptoms that subsequent patients with this disease have shown, and noted that there was a polyserositis, thus implicating more than just the gastrointestinal system and mesenteric lymph nodes. He was impressed with the profound accumulation of fat in the gut, but he also described the presence of foamy macrophages within the intestinal wall and mesenteric lymph nodes, and noted that these cells did not contain fat. With bacterial stains he demonstrated structures compatible with bacteria and considered the possible bacterial origin of this disease. These observations were ignored for many years, until in 1949 Black-Schaffer¹⁰ demonstrated that the foamy material within macrophages was PAS-positive material and suggested that it was a glycoprotein. In 1958, Sieracki and Fine¹¹ described what they called a "sickle-form particle," a very small particle 2 microns in length found both outside macrophages and also in clumps within macrophages. These particles were widely distributed throughout the interstitial connective tissue within the heart, in the interalveolar septa in the lung and in the spleen. They were present in Kupffer cells in the liver, around the acini of the pancreas, throughout the GI tract and were widely distributed in lymph nodes. Then in the 1960's with the advent of the peroral small bowel biopsy technique, electron microscopic examination of these very fresh tissues by many investigators at approximately the same time revealed bodies which possessed the fine structure of bacteria widely distributed throughout the

small intestine, but most numerous in the lamina propria.

These bacilliform bodies have been uniformly noted to be 1 to 2 microns in length and approximately 0.2 micron in diameter with a moderately electron dense wall. They possess a structure resembling a plasma membrane, and an internally finely fibrillar component in their cytoplasm and have been observed to be in binary fission. These structures do not correspond to any known cell product. Such forms have not been found in normal controls that have been subjected to small bowel biopsy, and have not been found in other diseases of the small intestine for which biopsy has been performed. In each study all are of very similar size and shape and are therefore considered to be a particular microorganism rather than a collection of secondary invaders. It is now proposed by many

investigators that these microorganisms exist extracellularly, but can be phagocytized and then exist within vacuoles in these macrophages. The organisms within vacuoles gradually disintegrate, leaving their cell walls which collapse, forming membranous structures folded together within vacuoles. Gram stains correlate well with the number of extracellular viable-appearing organisms and PAS stains correlate very well with the amount of membranous folded inclusions within these macrophages.

It is of note that patients with Whipple's disease, particularly those who have progressed to the point of diarrhea, respond very well to antibiotic therapy, suggesting that in some way these organisms are important in the pathogenesis of this disease. Also, the numbers of viable-appearing bacteria appear to correlate fairly well with the clinical state of the patient. In

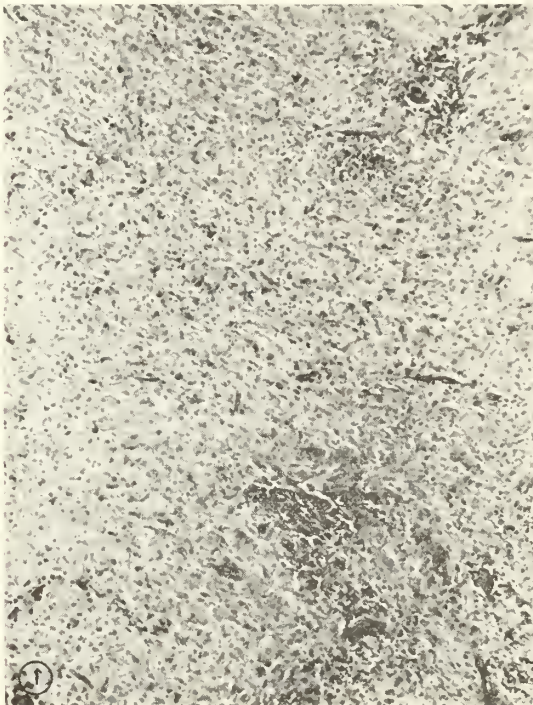


Fig. 1. Lymph node. A few scattered foci of lymphocytes remain, but most of the node is replaced by larger pale cells with indistinct foamy cytoplasm (histiocytes). Hematoxylin and eosin stain. x40 original magnification.

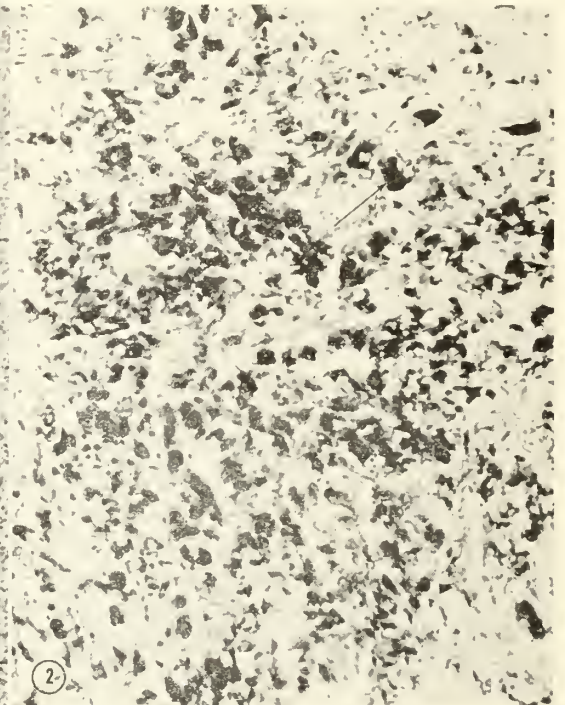


Fig. 2. Histiocytes contain abundant PAS positive material (arrow), virtually obscuring the cytoplasm of some cells. Diastase-digested periodic acid Schiff stain. x100 original magnification.

patients who are in remission it is difficult to find any viable-appearing bacteria by electron microscopy. In instances where biopsy has been repeated in patients in whom antibiotics have been discontinued, increased numbers of viable appearing bacteria have been found and subsequently these patients have developed diarrhea again.

These bacteria have been demonstrated in the endothelial cells of lymphatics within the lymph nodes. This has been recently proposed as the method of systemic dissemination. The actual portal of entry is not clear. These organisms have also been found in the epithelial cells of the small bowel, but they appear at the base of the cells, not at the tips.

We performed multiple special stains

on the first lymph node biopsy and were struck by the amount and character of the diastase resistant PAS-stainable material. However, at that time, we had no indication that this patient had any arthralgia and she had no gastrointestinal symptoms so that we did not immediately correlate it with Whipple's. However, Whipple's disease and its manifestations arose in discussing the possibilities for this very unusual lymph node. The clinicians were most anxious to investigate this patient further. A second lymph node biopsy and then a peroral small bowel biopsy confirmed the diagnosis.

A section of lymph node shows very few foci of lymphocytes remaining, for most of the node is replaced by large pale cells with indistinct foamy cytoplasm sug-

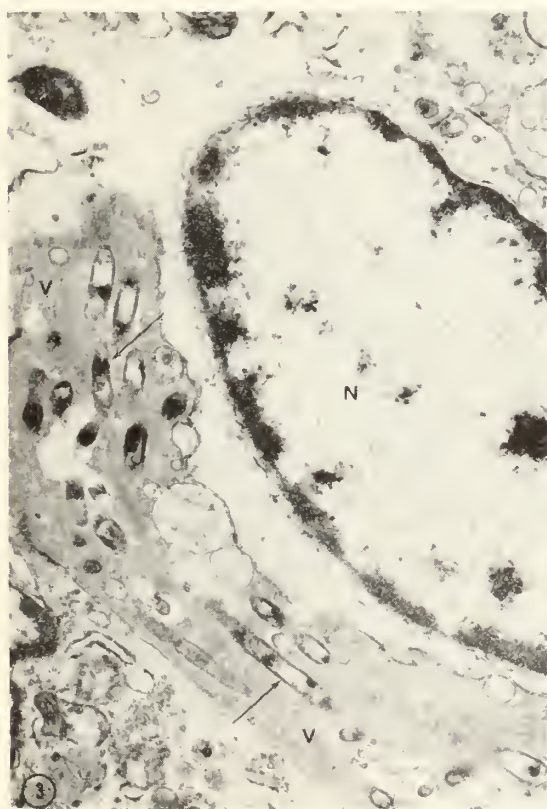


Fig. 3. Lymph node. Many rod shaped bacteria (arrows) are confined within vacuole (V) in cytoplasm of histiocyte. N = nucleus of histiocyte. Glutaraldehyde-osmic acid fixation. Uranyl acetate, lead citrate stains. x7,500 original magnification.



Fig. 4. Lymph node. Membranous structures (arrows) representing cell walls contained within vacuoles of histiocyte. Mitochondria (M) are swollen, a degenerative change. Glutaraldehyde-osmic acid fixation. Uranyl acetate, lead citrate stains. x15,000.

gestive of macrophages (Fig. 1). A PAS stain on this lymph node shows clumps of PAS-positive material virtually obscuring the cytoplasm of some of these cells. There is also much extracellular PAS-positive material (Fig. 2). At higher magnification, some are sickle-form in appearance. Electron microscopy performed on the second lymph node biopsy revealed many extracellular and intracellular rod-shaped bacteria quite similar to those seen in other studies of Whipple's disease. Many are viable-appearing, though contained within vacuoles within macrophages (Fig. 3). Other macrophages contained vacuoles within which are folded membranous structures representing cell walls (Fig. 4). With increasing organization these membranous structures become more amorphous and lose some PAS-staining ability. Swollen mitochondria in this macrophage suggest cellular degeneration.

The small bowel biopsy on this patient showed clubbed and dilated villi with prominent lymphatics in the wall. Within the lamina propria there is an increased number of cells and much PAS-positive material extracellularly. This material is not glycogen (Fig. 5).

An electron micrograph of a portion of an intestinal epithelial cell shows some of the small number of bacteria which were present in the intestinal biopsy of this patient. The lymph nodes, on the other hand, contained great numbers of bacteria.

One of the current problems in Whipple's disease is that there have been no microorganisms consistently cultured from patients with this disorder. One group has cultured a *Corynebacterium* and another group has grown out a *Temophilus* organism, but other workers have not been able to duplicate these results. We cultured tissue from this pa-



Fig. 5. Small intestine. Villi are clubbed and dilated with increased cellularity in the lamina propria. Hematoxylin and eosin stain. x40 original magnification.

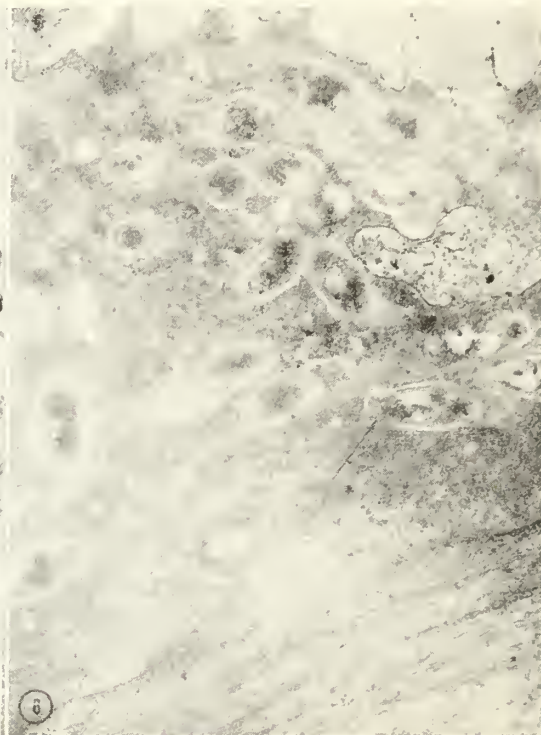


Fig. 6. Small intestine. Bacteria (arrow) are present within intestinal epithelial cell. Glutaraldehyde-osmic acid fixation. Uranyl acetate, lead citrate stains. x15,000.

tient in a wide variety of media, but did not isolate any organisms.

Dr. Hennigar: I rather thought that this case was very informative to me as a morphologist. When I first looked at the lymph node, I thought that this was a diffuse reticuloendothelial histiocytic response. I thought the H & E sections suggested the picture that an atypical mycobacterium would produce. You are all familiar with the some 34 strains of atypical mycobacteria, such as the Runyon and Battey strains. These organisms are acid-fast, stain readily, and will live for months to years in the macrophages and reticuloendothelial cells of the human body in, if I can use the term, peaceful coexistence. The same response will occur if you take a human mycobacterium and inject it into a hamster. There will be no caseation necrosis. The acid-fast organism simply stays in the macrophage until the macrophage dies and liberates the organism, when another macrophage then phagocytizes it. In this case, multiple and varied acid-fast stains were consistently negative. An electron microscopic examination of the tissue resolved the problem.

In 1950, I had a case that belonged to Dr. Charles Caravati and Dr. Stuart Raglan. A 40-year old man did have malabsorption and a lot of neutral fat in the stool. Their diagnosis was Whipple's disease, or intestinal lipodystrophy. I was told that the bowel was pale and edematous. I made a diagnosis of sarcoidosis on the mesenteric lymph node which I received. These two clinicians said "No, Whipple's." I said, "I'll tell you there's one way we can get this resolved. I'll send a note to Dr. George Whipple." Dr. Whipple wrote back and said it wasn't what he described. So, I said, "See, it's not Whipple's disease." Well, then they said, "We still believe it's Whipple's disease. You say it's sarcoid. Now, prove to us it's sarcoid." So I sent a slide to Dr. Benjamin Castleman at Massachusetts General Hospital. He wrote back, "In view of the

findings, this is Whipple's disease with a sarocid appearance to the lymph nodes." I have seen this occur two or three times since then and there have been reports in the literature of cases of Whipple's disease which present a focal granulomatous picture rather than this diffuse-appearing response of the lymph nodes. And there are some reported cases of the simultaneous occurrence of sarcoidosis and Whipple's. I really wonder if they aren't all just simply cases of Whipple's disease, as I am on the unitarian side, too.

Dr. Jervey: I hope that from the discussion the impression wasn't gained that this was an easy case. At first I thought that this was going to be the first CPC that I ever participated in where I had no earthly idea what the patient had. I think that if you had left off the intuitive small bowel biopsy statement, I would have had to make a diagnosis of sarcoid or lymphoma. The first patient whom I ever saw with Whipple's disease was a patient of Dr. Legerton's in whom we made a diagnosis of beri-beri heart disease. He was a young man with a big heart and congestive failure. We treated him with thiamine and he got well and in the course of three weeks his heart shriveled back to normal size. We presented him at a medical conference as a case of beri-beri heart, probably with malabsorption, although at that time his absorptive defeat wasn't too bad. A diagnosis of Whipple's disease wasn't made until about a year later, but he did have pigmentation and wasting and he probably had beri-beri heart. The importance of today's case is the uniqueness of this particular woman's situation. Now, it has been speculated by some that the polyserositis or whatever causes it leads to the intestinal defect, and that actually this disease begins not as an intestinal disorder but as some collagen vascular disease, perhaps leading to secondary GI manifestations. If her jejunal biopsy had

been negative I would say it would have been mandatory that we report her, but with the jejunal biopsy positive and no GI symptoms this woman still represents a rather unique example of the natural history of Whipple's. The other unusual feature that should probably warrant looking at her further is the unusual gam-mopathy that she has along with her disease which is not reported. I'm not convinced that Whipple's disease is an infection. These bodies may be bacteria, but they may be opportunistic bacteria which invade the affected bowel. The disease responds to very low dose tetracycline

therapy, very low-dose chloramphenicol therapy, nitrogen mustard, x-radiation and so forth. Again, I would raise the question of what the tetracycline is doing. Is it producing an inhibition of protein synthesis in the microorganism or is it inhibiting protein synthesis in a diseased bowel which is affected by an abnormal glycoprotein and in this way actually arresting the progress of the disease?

Dr. Hennigar: I think this is a very interesting point. So one really wonders, as you say, whether the organisms found in Whipple's disease are actually the answer to the disorder.

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Technical Considerations in Thyroidectomy—William H. Prioleau, M.D. (Charleston) *Amer Surg* 34:585 (Aug) 1968

In thyroidectomy when an endotracheal tube is not used operative trauma must be reduced to a minimum in order to prevent respiratory obstruction caused by laryngeal spasm and tracheal compression. Early division of the isthmus and severing of the antero-lateral attachments of the gland to the trachea and larynx permit an anterior rotation of the lobe as the lateral dissection progresses. This reduces the need for traction and manipulation with the attendant risk of hemorrhage and fissuring. It facilitates the exposure of the recurrent laryngeal nerve and parathyroid bodies. This approach is applicable regardless of the type of anesthesia. It makes possible a better controlled and less traumatic operation.

PRESENT ROLE OF CORONARY ARTERIOGRAPHY

GRADY H. HENDRIX, M.D.*

Previous reports in this journal have discussed the role of coronary arteriography in patients with or suspected of having coronary artery disease. The basic evaluation of such an individual and our indication for coronary arteriography were described in those reports.¹⁻² The only basic change in the evaluation practiced in our institution is that we now use the treadmill routine of Bellett for maximal stress exercise. (Table 1).³

Table 1

Stage	Speed	Grade	Time
I	1.7	10%	3 min.
II	2.5	12%	3 min.
III	3.4	14%	3 min.
IV	4.2	16%	3 min.
V	5.0	18%	3 min.

Indications

The indication for coronary arteriography on 164 patients at the Medical University Hospital and Veterans Administration Hospital, Charleston, S. C. are given in Table 2. A patient was not considered to have medically intractable angina unless he was incapacitated after becoming established on the regimen as described in Table 3. We have followed the practice of digitalizing all patients with coronary atherosclerosis prior to Inderal therapy as a safeguard against development of heart failure.

Disposition

The group that underwent coronary arteriography for diagnostic purposes for the evaluation of disabling chest pain demonstrated normal coronary arteries in

Table 2

Indications for Coronary Arteriography on 164 Patients—Medical University Hospital and Veterans Administration Hospital, Charleston, South Carolina

- I. Diagnostic
 - A. Disabling chest pain without other evidence of heart disease—42
 - B. Disabling electrocardiogram without other evidence of heart disease—5
 - C. Heart failure or arrhythmias due to obscure causes—21
- II. Evaluation for coronary surgery—55
- III. Evaluation of coronary arteries in patients with known valvular or congenital heart disease.
 - A. Aortic valve disease—35
 - B. Mitral valve disease—5
 - C. Anomalous origin of LCA from pulmonary artery—1

40 of 42 instances. The two patients with coronary atherosclerosis demonstrated complete obstruction of the right coronary artery in one and 50 per cent obstruction of the right coronary artery and the anterior descending coronary artery in the other. One of the 40 patients with normal coronary arteriograms had rather typical angina pectoris historically but a normal electrocardiogram under maximal stress.

The group of 5 patients with "disabling" electrocardiograms had normal coronary arteriograms. This group represented one right bundle branch block, one left bundle branch block, one frequent premature ventricular beats, and two with non-specific ST-T changes.

Idiopathic myocardial pathology was the indication for study in 15 patients, one with significant coronary artery disease.

Two patients with idiopathic atrial fibrillation had a normal coronary ar-

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teriogram and 2 had coronary atherosclerosis. One patient with paroxysmal atrial tachycardia had a normal coronary arteriogram and one had coronary atherosclerosis. However, the latter patient had episodes of atrial tachycardia for many years prior to the development of angina pectoris.

Evaluation of the coronary arteries in patients with known valvular or congenital heart disease was the indication for coronary arteriography in 41 patients, with aortic valve disease being the indication in 35 of these. The findings were varied and were used in making surgical decisions on an individual basis.

Table 3
Maximal Medical Regimen for
Intractable Angina

- 1—Optimal weight
- 2—No smoking
- 3—Reasonable avoidance of precipitating factors
- 4—Control of other disease processes:
 - (a) Diabetes
 - (b) Hypertension
 - (c) Hyperlipidemia
- 5—Digitalization
- 6—Long acting coronary vasodilators
- 7—Inderal in dosage of at least 160 mg./daily

Known coronary atherosclerosis with intractable angina was the indication in 55 patients.* The surgical procedure consisted of a left internal mammary implant in 12, bilateral internal mammary implants in 2, and a left main coronary endarterectomy in 1. The results are summarized in Table 4. Internal mammary arteriography is being performed 1 year after surgery for follow-up evaluation.

Complications

There have been 2 significant complications in our group of 164 patients. A 39 year old man suffered an acute antero-septal myocardial infarction shortly after conclusion of the procedure from which he recovered uneventfully.

*Surgery performed by Dr. William Lee, Dr. Jack Arrants, Dr. Randolph Bradham, Dr. Dallas Dalton, and Dr. Peter Hairston of the Thoracic Surgical Section, Medical University of South Carolina, Charleston, South Carolina.

A 54 year old man, bedridden with angina, was studied while on 160mg of propranolol daily. This man had undergone a Beck procedure 15 years ago. Following injection and visualization of the left coronary artery with 60 per cent Renograffin he developed a low output syndrome and expired 45 minutes later. Post-mortem examination showed total occlusion of the right coronary artery at its orifice, total occlusion of the anterior descending coronary artery at its orifice, and 50 per cent obstruction of the left main coronary artery.

Table 4
Surgical Results of Left Internal
Mammary Pedicle Implants

- CK—Angina reduced by 50 per cent. Internal mammary arteriogram shows collateralization into myocardium.
- DB—Angina reduced by 75 per cent. Internal mammary arteriogram shows collateralization into myocardium, ADCA, and venous phase.
- LA—Total relief of angina. Internal mammary arteriogram shows collateralization into myocardium and filling of ADCA and venous phase.
- OP—No improvement. Internal mammary arteriogram shows patent vessel down to tunnel but collaterals into myocardium not seen.
- BW—50 percent improvement. Internal mammary arteriogram shows collateralization into myocardium and filling of ADCA.
- WC—Died of acute MI 24 hrs. postop.
- VB—50 percent reduction of angina in 8 months. Not restudied.
- LM—No improvement. Suffered an acute MI 6 months postop. Arteriogram shows collateralization into ADCA.
- VM—Died of acute MI 3 months post-op. Post-mortem showed the implant thrombosed before entering the myocardium.
- EB—50 percent reduction in angina. Not restudied.
- PM—Too early to evaluate.
- GF—50 percent reduction in angina. Internal mammary arteriogram shows vessel patent only to pericardium.
- Other Surgical Procedures**
- CR—Bilateral internal mammary implant and saphenous vein graft. Total relief of angina in 6 months.
- FW—Bilateral internal mammary implant. Too early to evaluate.
- JB—IMCA endarterectomy and patch graft. Operative death.

Discussion

The technique of coronary arteriography continues to be invaluable in the differential diagnosis of disabling chest pain. Two patients have been discovered in our group who had atypical chest pain with normal maximal stress exercise tests and significant coronary atherosclerosis. We have discovered our first patient who appears to have typical angina pectoris with no other evidence of coronary atherosclerosis, including maximal stress exercise tests and coronary arteriography. It is clear that coronary arteriography must be used as part of the total assessment of a patient.

The introduction of propranolol as an effective agent in the control of angina pectoris has reduced our number of surgical candidates considerably, as a patient is not considered for surgery until

he has proven refractory to at least 160 mg of propranolol daily.

Our surgical series of revascularization procedures is small, but we feel the results indicate that it should be offered to individuals with intractable angina unresponsive to medical therapy. Results of left main coronary endarterectomy have been fraught with an extremely high mortality and they have now been abandoned at many institutions.

Summary

Experience with coronary arteriography at our institution continues to grow and it appears to have a place in the evaluation of patients with or suspected of having coronary artery disease. Propranolol has made a significant impact on the treatment of severe angina pectoris. However, revascularization procedures have a place in the treatment of patients refractory to adequate medical therapy.

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Surgical Ligation of an Anomalous Left Coronary Artery Arising from the Pulmonary Artery in an Adult. Gerald L. Summer, M.D., Grady H. Hendrix, M.D., Charleston, S. C. *Amer Heart J* 76:812-815 (Dec) 1968.

Origin of the left coronary artery from the pulmonary artery in individuals 16 years of age or more has been reported in 20 patients of whom only 5 were recognized during life. Infants with this anomaly show cardiomegaly, congestive heart failure, and usually die from myocardial ischemia during the first year of life. When an individual survives into older childhood and adulthood collaterals have developed from the right coronary artery to the left coronary artery and its connection to the pulmonary artery results in a left to right shunt and a continuous murmur. A case is presented of a 22 year old asymptomatic male seen at the Medical College Hospital with this lesion. He was treated by ligation of the anomalous left coronary artery at its origin from the pulmonary artery thereby abolishing the left to right shunt and eradicating the rapid run-off resulting in improved myocardial perfusion. Some recent instances of surgical treatment by use of a Dacron or vein graft from the aorta to the left coronary artery have been reported.

X-RAY FILMS OF THE MONTH

S. E. PUCKETTE, JR., M.D.
Charleston County Hospital



The illustrated AP supine film of the abdomen was taken on an elderly white male who 24 hours previously had onset of a steady pain in the lower part of his abdomen. When seen 12 hours prior to the film, the pain had subsided, but tenderness was noted in the left lower quadrant. Subsequently, the pain recurred, became cramping in nature, and abdominal distention was noted. The patient was known to have multiple diverticula in the colon.

The inverted "U" loop of large bowel demonstrates the classical appearance of volvulus of the sigmoid colon. It is probably the second most common cause of obstruction in the colon, and is associated with a long, mobile sigmoid. Most of the acute sigmoid volvuli involve torsion of 360° . A torsion of 180° is seen in roughly 35% and one and a half complete turns in approximately 10%.

Once the volvulus is established, local distention is produced and fluid levels are usually present, particularly in the lower portion of the loop. The prestenotic portion of the colon becomes distended as in any

other cause of obstruction with accumulation of air and fluid. The two inner walls of the loop lie close together and often produce a dense midline crease. The inferior portions of the dilated loops converge downwards towards the area of the twist.

If there is any doubt as to the diagnosis, a barium enema will indicate the twisted nature of the obstruction producing a so-called parrot's beak outline to the end of the barium column. Depending on the degree of torsion, contrast medium may or may not enter the distal portion of the loop. One should always look for a possible pneumoperitoneum, secondary to rupture.

In the acute case, non-operative treatment consisting of passing a rectal tube through the area of torsion to deflate the loop is preferred. The torsion will usually be relieved spontaneously. This rectal tube should be introduced with a sigmoidoscope. Barium enemas are held to be of no real value in reducing the volvulus. After the acute phase has passed, the elongated sigmoid generally is resected to prevent recurrence.

President's Page



In an earlier age, a man of great wisdom pondered the timeless dilemma of ethics vs. economics. He told his students to "Go into the street and give one man a lecture on morality, and give another a coin. See which respects you most." I offer you neither a lecture nor coin, but rather a difficult problem that we all must solve together.

If we are to cure the sick and heal the injured in the way we know to be best, we must always preserve our professional freedom. To do so, we must demonstrate in

many quiet ways that organized private practitioners uphold their own professional integrity. How? By enforcing the Principles of Ethics under pain of expulsion from organized medicine!

The overweening growth of both private and government third-party payers has sorely taxed our ability to guard against unethical practices. But it has even more direly heightened the probability of a lapse from grace by a single physician.

Our commitment to charge no more than fees "commensurate with the services rendered and the patient's ability to pay," has been confounded by substitution of state and Federal treasuries in the place of the patient's private purse. Still, we can find guidance in the basic principles.

One solid bench mark, pointed out by the new Speaker of the House of Delegates of the AMA, Dr. Russell Roth, is that "Medical Ethics frowns on medical extravagance." Thus, over-utilization is unethical. And, because "A physician is unethical only when his course of action is adverse to his patient, his community, or to the public at large—including, of course, his professional colleagues," over-charging is unethical even if it is not the patient who pays.

Inquiry into the ethicality of any physician's activities should ordinarily be launched and conducted by his local medical society. The public, our patients, await our demonstration of the high standards of our calling.

William L. Perry, M.D., President

50 YEARS AGO



November 1919

A tribute to Dr. Walter Porcher of Charleston, for many years secretary of the Association, and eventually its President, appeared in this number. He was eulogized as a leader in this state and a wider area. There was also a eulogy of Dr. Wesley Norwood, enthusiastic proponent of the use of *veratrum viride*. The Association had placed a stone at Dr. Norwood's unmarked grave.

Editorials

Progress in Relations with Students

Increasing concern for the participation of medical students in the overall organization of medicine has led to many changes in the relationship of the student and the practitioner. It seems certain that there has been much room for improvement, and efforts are being made in various areas to bring the two categories closer together, in order particularly to give the student a better concept of what the practice of medicine consists of and to give the physician the opportunity to know what his upcoming colleagues are thinking about.

There is little question that this is a worthwhile step that leads to better understanding, better relations and better behavior on both sides. As with other changes and protests in other fields, there has been in the group of medical students a rather small and violent minority whose antics have at times put a bad name on the student organizations. We believe that the students at the Medical University in Charleston have been a remarkably level headed group who are rather anxious for some mature guidance and who are willing to cooperate where cooperation is indicated. Since this is written prior to the scheduled meeting of the Student AMA in Charleston in October, it may be that developments there will throw more light on the situation among the many participants from this part of the country. The South Carolina Medical Association has made positive effort to show its feelings toward the students by inviting a number of them to attend and to participate in its Annual Meeting, by furnishing the entire senior class with copies of the *Journal*, by contributing in a small way to the expense of the convention, by offering the editorial pages of the *Journal* for their comment, and by setting up a liaison com-

mittee through which students may communicate with the Association. This seems like progress to us.

Colorado Medical Society has just voted full membership for medical students. In one year students at the University of Colorado will be authorized to set up a component society and send delegates to the state convention. This policy might perhaps bear some examination in regard to privileges and obligations of the members of the state association. Conceivably the 366 students of medicine at our Medical University might swing a disproportionate amount of weight in deliberations in the House of Delegates. It might seem that at present they are not conversant enough with the problems and responsibilities of practice to be understanding about matters which might come up for discussion. Perhaps this is an unfair suspicion. So far no proposal has been made to the South Carolina Medical Association to follow the lead of the Colorado Medical Society.

Sleazy Semantics

Those prominent politicians such as Nelson Rockefeller who are urging that a "national universal health insurance program" be established are trying to erase the connotation of compulsion by using a different word. Universal or compulsory, the program is the same old one for which the medical profession has fought, bled, and won (?) over many years past.

Since its proponents seem to pay no heed to the deficiencies and fortunes of similar programs already in effect elsewhere, our profession will no doubt be required to defend its conviction that such schemes simply do not work, and indeed we will need to persuade our patients and supporters that compulsory insurance is no answer to the problems of the day.

PRESENT LEGACY OF IMHOTEP

WILLIAM HUNTER, M.D.
Clemson, S. C.

Physician to the Pharaoh and architect extraordinary of some five thousand years ago, Imhotep was constructing temples, courts, and pyramids that astound the present day eye while he wasn't spending his time on interesting case reports that outlined the diagnosis, treatment and prognosis of shock. Perhaps the true father of medicine, this ancient Egyptian's architectural marvels and hospitals had been covered by Sahara sand for three thousand years before Hippocrates saw the light of day on his native Cos.

Imhotep's present day successors and land are no less astounding to the modern traveler's eye. Egypt today is easily the most interesting land I've ever visited on four continents. The genuine warmth and friendliness of its citizens toward Americans is both unexpected and encouraging today when we are reviled and shown disrespect in much of the world.

My genial host for a day of medical travels and experiences was Dr. Shoukry Said, Egyptian trained, knowledgeable, with a kind and thoroughly professional bedside manner. From a village in upper Egypt, Dr. Said is of a Coptic Christian family. The day consisted of a visit to the University Medical out-patient clinics which left me with the impression I had returned in time to the out-patient clinics of the Medical College of South Carolina in the early 1950's. I saw the familiar faces of the patiently waiting ill, overly grateful for small attention, taking their turn in the tiny examination rooms off the side of a main hall; the same hurried and vaguely important facial expression on the countenance of the residents and interns. However, the diseases were different and certainly exotic to this South Carolina physician. Bilharzia (schistosomiasis) with

its myriad manifestations, trachoma, amebic dysentery, and endemic goiter from the oases were most apparent. Bilharzia, which can affect every organ of the body, is the big problem. This disease, with its complications, causes a large portion of all mortality and morbidity in Egypt. The Nile and the host snail therein are the source of the trouble. Raw sewage in the river, coupled with swimming or wading in or drinking its unchlorinated water, results in the schistosome infestations of humans. The resulting cirrhosis, anemia, intestinal and urinary tract polyps present most interesting and very ill patients.

My second medical tour stop of the day was the operating theatre of a small government hospital where Bilharzia polyposis of the ascending colon was being resected. These polyps were granuloma like, about the size of the end of the thumb, causing bleeding and resultant anemia and were numerous enough to have caused considerable bowel dysfunction and anemia. Microscopic section showed the ova within the center of the polyp along with lymphocytes and giant cells which made up the polyp. In the experience of Egyptian physicians to whom I talked, such polyps of the bowel had never resulted in malignant degeneration. Not so in the urinary tract. These polyps, according to Dr. Said, often underwent malignant degeneration, and indeed bladder carcinoma is a major problem in the hospitals of Cairo. Chronic pyelonephritis resulting from the schistosome and renal calculi from undetermined causes were also major problems. However, to my surprise, and contrary to the Egypt of twenty years ago, the venereal diseases were most rare. Lymphogranuloma and syphilis were extremely rare and had been seen only a few times by

experienced physicians. Gonorrhea was somewhat more frequent, but still seen a great deal less than in my Clemson practice. The sexual morals are somewhat conservative and particularly so for the unmarried females. Women as a general rule in Egypt are treated with great respect and it's perfectly safe for them to walk anywhere at any time day or night. One other thing; your wife will probably not even be flirted with unless she is somewhat hefty by American standards. This brings up another common medical problem, osteoarthritis, found in the knees of the overweight Egyptian females.

Our third stop of the day was at the Cardiac Hospital where the entire staff of the hospital had descended upon the operating room to try out their new American Optical Heart-Lung Machine on a dog. Here as elsewhere the presence of an American doctor stopped all traffic. There was always a long train of white coats following along in the style of a "grand ward round" (shades of Vince Moseley!) everywhere we went. The amazing warm friendliness of doctors and nurses was present throughout. The Egyptians were most eager to share their knowledge and friendship, to ask advice, to apologize frequently for their material shortcomings (which were few and far between).

After a visit to the Greek Private Hospital, which with its hospital odors and marble staircases reminded me of the old Anderson Memorial Hospital, we ended the day at the Charity Clinic of the Good Shepherd in the midst of the worst area of Cairo. Here Dr. Said had initiated and maintained a free clinic for the poor, staffed by the Sisters of the Cross of the Roman Catholic Church in conjunction with their orphanage and an English speaking school. The Mother Superior, Sister Margaret and the only North American (Canadian) in that part of Cairo, seemed hungry for talk of home, but more desperate for any old clothes for her orphanage and the urchins of the street, as well as the medications for Dr. Said's clinic. Anyone who wishes to send

old clothes or worthwhile drug samples to these places may use the address for drugs. Polyclinic of the Good Shepherd, for clothes, the Orphanage of the Good Shepherd, both at 121 Shoubra Street, Cairo, UAR.

I mentioned that Dr. Said was an Egyptian Christian; this isn't at all unusual in today's Egypt. In fact, about half of the physicians there are Christians, and about one in six Egyptians are members of the Coptic Christian faith. The Copts were the first Protestants really, splitting off from the Roman Church in 451 A.D. over a minor point in theology. The Copts lean to the professions such as medicine and law; also, they are usually rather successful in business, but are as strongly faithful to their country as any Moslem.

The Moslems conquered Egypt from the Copts over one thousand years ago, yet the Copts consider themselves the original Egyptians, the word Egypt coming from the greek word gypt, meaning Coptic. The Moslem majority is very tolerant of other religions, including the local Jews, and makes a marked distinction between being anti-Jewish (which they aren't) and anti-Zionist (which they are).

The Russians are here. However, it is my distinct impression that they are here through default and that the Egyptians would much rather have Americans. The standing joke in the hospitals is that Egyptian medical graduates can't be sent to the United States or the U.S.S.R. for studies. In the U.S. they often stay for good, and in the U.S.S.R. they won't stay for more than a couple of weeks before they come home. Generally speaking, Russian medicine is not well thought of by Egyptians.

I suppose that those interested in travel would sometimes like to turn back the pages of history to such delightful times and places as Hemingway's Havana of the 1930's, or to Robert Louis Stevenson's Hawaii of the late 1800's. Let me tell you, though, those days aren't necessarily gone forever. Nasser's Egypt (west of Suez) is a beautiful and exotic land, fresh and

beautiful. It loves the Americans, and there a dollar is really worth something. Two weeks in Egypt during spring or autumn is an experience that you will never forget.

But let me issue a few warnings. Take along sublingual nitroglycerine (regardless of your coronaries) for taxi rides. Forget what you were taught in anatomy while watching belly dancers (no one can really move a pelvis like that, it must be a mirage); don't admire these dancers out loud unless you want them sent to you for the rest of the night (they say Nasser has put more clothes on them, which makes you wonder what it was they wore before).

Never, never offend a merchant in the Bazaars by taking the first price he offers (very low). My wife did this and spoiled a poor fellow's entire evening by not bargaining him down to at least 70% of his original price. Don't spoil the tipping system by being the 'Rich American' and increasing the tips from the respectable 10c range they are in at the present.

For an interesting look at medicine, for the most beautiful exotic dancing girls in the world, for the friendliest people, for history beyond the mind's conception, for a present day look at Africa (like dodging camels in the streets) in a land where your dollar really counts, go to Egypt now.

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THE MONTH IN WASHINGTON

Health, Education and Welfare Secretary Robert Finch has asked a special Task Force on Medicaid to examine and make recommendations on proposals for a sweeping national health program.

The Task Force, headed by Walter J. McNerney, president of the Blue Cross Association, is scheduled to issue a report about the first of the year.

After referring to a proposal for universal health insurance endorsed by many governors at the National Governors' Conference, Finch told McNerney in a letter:

"I would like specifically to request that the Task Force consider, along with its other deliberations on Medicaid and related programs, what directions and initiatives you feel the HEW Department should pursue in this area."

According to McNerney, one phase of the study would include the extension of Medicare to persons of all ages, roughly the national compulsory health plan backed by Walter Reuther of the United Auto Workers and his Committee of 100 for National Health Insurance.

McNerney, however, also said that all types of mass plans would be studied, including the health insurance tax credit proposal endorsed by the American Medical Association.

The rapidly rising costs of Medicare and Medicaid have brought the issue to the forefront. The administration said older people who enter the hospital after January 1 will have to pay for an additional \$8 of their hospital bills due to the higher costs. The increase is required by law.

The benefit cutback results from an adjustment of the portion of the hospital bill for which a Medicare beneficiary is responsible if these costs have risen substantially.

* * *

After a two-year study, Sen. Abraham Ribicoff (D., Conn.), former HEW Secretary, said he's reached the conclusion the federal health effort "is a planless con-

glomeration of programs administered by more than a score of agencies and departments."

Federal health spending "instead of supporting programs to provide for the health of the people . . . is maintaining a cumbersome, disjointed bureaucracy that even key government officials have difficulty managing," he told the Senate.

"Instead of eliminating problems, (they) may be adding to factors such as rising costs, limited access to care and the fragmented organization of health services."

"There are so many programs administered in such bureaucratic confusion that no one—not the HEW Department, not the Bureau of the Budget nor any private organization was able to tell the subcommittee even how many programs there are."

* * *

The American Medical Association told Congress drug dependent persons should be treated as patients rather than criminals.

In testimony before the Senate Juvenile Delinquency Subcommittee, Henry Brill, M.D., chairman of the AMA's Committee on Alcoholism and Drug Dependence, said physicians are concerned over legislation before the Subcommittee proposing harsher penalties for persons unlawfully possessing drugs for their personal use.

"Mere possession for personal use of depressant and stimulant drugs having a legitimate medical usage should not constitute an offense," Dr. Brill said. "The degree of social hazard and the reasons for having the drug should be taken into account."

"With respect to the entire section on offenses and penalties, we propose an amendment to direct courts to appoint a panel of medical experts in each case where a drug abuser is brought to trial on a charge of illegal possession and where, in the court's opinion, medical treatment may be indicated. The panel

would make a determination as to whether the defendant has a medical problem associated with his abuse of drugs—a physical or psychological disability or drug dependence.

"If medical treatment is indicated, the panel would recommend to the court the type of treatment needed—that is, general—medical or psychiatric care; in-patient hospitalization or clinical treatment; group therapy; half-way house etc. If medical treatment is not indicated, or if measures in addition to medical treatment are needed, the court would then consider the non-medical handling of the case."

Under the proposed AMA changes, the HEW Department, rather than the Justice Department, would control the offi-

cial classification of drugs, and the research and public education programs in the field. Control provisions would focus on manufacturers and distributors, rather than on physicians.

"We recommend that as a matter of public policy Congress explicitly charge the HEW Department with the major responsibility for research on all aspects of drug abuse and dependence other than enforcement," said Dr. Brill.

The AMA supports provisions in the legislation "which would allow researchers to withhold name of subjects, and to handle controlled drugs without prosecution, especially on state and local levels, has served to hamper needed research in the past."

MEETINGS

First Birth Defects Symposium will be held at the J. Hillis Miller Health Center on December 12, 1969. The program is being presented by the Department of Pediatrics and the Division of Postgraduate Education, and co-sponsored by the Alachua County (Florida) Chapter of the March of Dimes. Dr. Arlan Rosenbloom is Program Director.

Registration fee for the program will be \$30 which will include tuition and all amenities for registrants. Residents, Interns and members of the Armed Forces are admitted on a complimentary basis. A general announcement and registration form will be mailed about 6 weeks prior to the program.

Requests for additional information and registration forms should be addressed to the Division of Postgraduate Education, J. Hillis Miller Health Center, Box 758, Gainesville, Florida 32601.

The American Board of Family Practice announces that it will give its first examination for certification in various centers throughout the United States. The

examination will be over a two-day period on February 28-March 1, 1970. Information regarding the examination and eligibility for the examination can be obtained by writing:

Nicholas J. Pisacano, M.D., Secretary
American Board of Family Practice, Inc.
University of Kentucky Medical Center
Annex No. 2, Room 229
Lexington, Kentucky 40506

NEWS

The State Board of Health is conducting a nutrition study in 16 counties this fall, asking 2,000 families what they eat.

Information gleaned in the study over several months will be used to plan programs to combat hunger and malnutrition.

MEDICAL DIRECTOR—Generalist or Specialist.
Experience in the care and training of handicapped children required. Experience in the Administration of a Medical Department desirable. Must be licensed or eligible for licensure in South Carolina. Liberal fringe benefits. Salary \$18,000 to \$22,000 depending upon qualifications. Write or apply to Edward A. Rondeau, M.D., Superintendent, Pineland, A State Training School and Hospital, 8301 Farrow Road, Columbia, South Carolina, 29203.

Book Reviews



POTIONS, REMEDIES, & OLD WIVES' TALES by W. W. Bauer, M.D. Doubleday & Company, Garden City, N. Y. 1969. Pp 319 \$5.95.

Dr. Bauer, formerly of the AMA, is a well known writer of books on medical subjects aimed at the public, and has enjoyed a deserved popularity. This latest book is a comprehensive, almost encyclopedic, discussion of the fallacy of many of the beliefs concerning health that plague mankind. It tells of the origin of the many dictates of folklore, and the part played by witchcraft, religion, food, herbs, plants and animals in our innumerable inherited beliefs in their virtues or dangers. The book grants some validity to certain old wives tales and shows how some of our potent modern drugs have developed from primitive remedies. A readable and entertaining book, perhaps best

taken in small doses, or used as a source of reference.

J. I. W.

INSOMNIA by Gay Gaer Luce and Dr. Julius Segal. Doubleday & Co., N. Y. April, 1969. Pp. 370. \$6.95.

This is no handbook for the insomniac, but rather a quite complete discussion of his troubles—causes, results, treatment and the rest. It describes modern research into this still obscure disorder. The different patterns and individual variations are discussed and the virtues and failures of pills and potions are considered. The newest methods of inducing "electrosleep" are described, and hypnotism gets its consideration.

A knowledgeable reviewer has called this a "superb summary." It is not a short one. The interested victim will require a good many insomniac hours to cover its 370 pages.

J. I. W.

RESIDENCY IN GENERAL PSYCHIATRY

The William S. Hall Psychiatric Institute has residency openings commencing July 1, 1970, in the three year general psychiatry program. The program is academically oriented and fully supervised by full-time teaching staff of nine general psychiatrists, three child psychiatrists and two neurologists. The full-time staff is supplemented by teaching consultants in neurology, psychiatry, and child psychiatry and by excellent supportive services in psychology, social work and adjunctive therapies. Salary first year \$11,358; second year \$12,496; and third year \$13,633. Submit inquiries to Director, William S. Hall Psychiatric Institute, Drawer 119, Columbia, South Carolina 29202.

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Physician interested in opportunities in S. C. for the practice of radiology. Particularly interested in solo practice or possibly part time coverage of several small hospitals.

Physician's orthopedic residency will be completed in July 1970. Residency has included nine months of formal fellowship training in surgery of the hand. Is interested in practicing in S. C. in solo practice or in association with another orthopedist where there is a potential for hand surgery.

Cherokee County, S. C. (population 37,000) needs more physicians. Potential for both general practitioners and specialists.

The town of Central, S. C. (population 5,000) has no physician. Citizens will help secure an office for an interested general practitioner.

For more information concerning this column write: Journal of S. C. Medical Association, 80 Barre Street, Charleston, S. C. 29401.

The Journal of The **SOUTH CAROLINA** *Medical Association*

DECEMBER, 1969—VOL. 65 NO. 12

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The views expressed in this publication are those of the writers and do not necessarily reflect the opinions of the South Carolina Medical Association.

Contributions of Original Articles

Length—Short articles of about 2,500 words (about 8 typewritten pages, double spaced) are preferred. Longer articles ordinarily will defer to the shorter ones in schedule of publication.

Manuscripts—Manuscripts should be typewritten, double spaced, and the original and a carbon copy submitted.

Illustrations—Ordinarily publication of 4 small illustrations or the equivalent accompanying an article will be paid for by The Journal. Any number beyond this must be paid for by the author except under unusual conditions. Illustrations should be sent as glossy prints or graphs in black ink with lettering large enough to show after reduction.

References—Should conform to the following order: surname and initials of author, title of article in small letters, name of periodical, with volume, page, month, day of the month if weekly, and year—e.g.: Lee, G. S.: The heart rhythm following therapy with digitalis. Arch Int Med 44:554, Dec. 1942. They should be listed numerically in order of appearance in the text. Standard abbreviation for journals should be used. Note that periods are not used with these abbreviations as indicated by the Index Medicus. Other abbreviations should also be standard—e.g. mg, ml, Gm.

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THERMOGRAPHIC DEMONSTRATION OF NICOTINE-INDUCED VASOCONSTRICTION

JOHN E. PARKER, M.D.**
GILBERT B. BRADHAM, M.D.***

Americans smoke approximately 500,000,000 cigarettes per year. This figure represents a user population of approximately 70 million people. Of this group of people, a significant number complain of symptoms referable to the peripheral vasculature.

During the year of 1967, all patients seen with symptoms of peripheral vascular insufficiency were questioned as to their use of nicotine. It was found that approximately 75 per cent of patients seen were cigarette smokers.

In an effort to discern the vasoconstrictive effects of nicotine in peripheral vascular disorders, attention has been recently focused upon the thermograph as a diagnostic tool.

The thermograph (Barnes Engineering, Co.) is an instrument designed to detect and portray infrared radiation. The instrument usually functions as a scanning camera. A system of mirrors scans the object under study and focuses heat energy upon a sensitive device which generates an electrical current proportional

to the amount of heat. The electrical current modulates the intensity of a lamp. The light from the lamp is projected onto a polaroid film, completing a picture of the heat. The thermograph is capable of scanning a large part of the body, measuring temperature at 60,000 sites and portraying these measurements as gradations of light upon the finished film. The entire process requires only six to eight minutes.

This presentation is that of thermographic study of the effect of smoking on patients having known peripheral vascular disease.

Method

Patients having peripheral vascular disorders are studied in an area of the hospital designed for this purpose. The patient is placed in bed in a constant temperature (75°F.), constant humidity (55 per cent) room for an adaptation period of 30 minutes. Routine studies consisting of oscillometry, phlethysmography, etc. are performed. A thermograph is then taken of the part under study. If the patient is a cigarette smoker, he is instructed to smoke one cigarette in his usual fashion. At completion of the cigarette, another thermograph is made, all circumstances being kept constant.

Results

Twenty patients had thermograms performed before and after smoking. In this series there were 12 male and 8 female adults. Clinical disorders in this group

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Fig. 1. These thermograms (infrared or heat photographs) show the vasoconstrictive effect of smoking one cigarette. The patient suffered from Raynaud's Syndrome. The light areas are "hot" areas, the dark areas are cool. The photograph is a mirror image.

include arteriosclerosis obliterans, Raynaud's syndrome, postphlebotic syndrome and collagen diseases.

Figure 1 represents thermograms performed on a 50 year old white male auto mechanic who was diagnosed as having Raynaud's syndrome. As can be seen from the thermogram, there is a remarkable reduction in the heat distribution pattern of both hands after smoking one filtered cigarette, indicating cooling of the extremities secondary to the vasoconstrictive effects of nicotine.

Figure 2 represents the thermograms obtained from a 48 year old white male with atherosclerosis obliterans involving both lower extremities. The contrast between the thermograms taken before and after smoking demonstrate the reduced thermal pattern of both legs as a result of the vasoconstriction by the peripheral vessels in response to nicotine stimulation. Direct skin temperature measurement decreased on an average of 2° C.

In this series 18 patients showed distinct and significant cooling of skin after smoking. The other two patients demonstrated no effect of nicotine.

Comment

Thermography has developed as a useful and reliable indication of surface temperature. The test is easily performed on



Fig. 2. These thermograms show the legs of a patient with arteriosclerosis obliterans, particularly evident in the right foot (mirror image photograph). After smoking one cigarette, vasoconstriction has become superimposed upon existent decreased blood flow.

all patients. The patient is not touched nor required to assume unusual posture or exertion. While it is acknowledged that surface temperature is a complex result of the body's regulation of heat, it has been our experience that body surface temperature is constant under constant, comfortable environmental conditions. Surface temperature decreases with any cause for peripheral vasoconstriction. Therefore, despite the effect of cardiac output, blood volume and metabolic rate, it continues reasonable that decreased body surface temperatures under constant environmental conditions and absence of acute systemic changes indicate peripheral vasoconstriction and a relative decrease in blood flow to surface areas.

In the patients studied it is noted that 18 of 20 patients had significantly decreased surface temperatures after smoking only one cigarette. The two patients who showed no change probably indicate individuals who do not manifest vasoconstrictive responses to nicotine.

Patients who have been studied and who show thermographic evidence of vasoconstrictive response to nicotine are given vigorous advice to cease smoking immediately and completely. It has been found that such advice is met with appreciation and with a general improvement in

symptomatology. It has been noteworthy that most of these patients are reinforced in their endeavor to cease smoking when they are allowed to view the thermographic evidence underlying their physician's advice.

Thermograms of these patients have also been used in instruction of medical students and appear to be a useful means of explanation of the pathophysiology of the peripheral vasculature.

Summary

Thermograms (skin surface heat photographs) were used to assess the peripheral vasoconstrictive influence of nicotine. In

18 of 20 patients with documented peripheral vascular disease, thermograms showed marked decrease in skin temperature after the patient had smoked one cigarette.

Thermography allows rapid documentation of skin surface temperatures over a relatively large area. It also provides a means of informing the patient of the effects of nicotine.

It has been our experience that patients with peripheral vascular disorders who show evidence of nicotine-induced vasoconstriction are easily induced to cease smoking and are benefited by abstinence from tobacco.

Mycotic (Fungal) Endocarditis After Cardiovascular Surgery—Peter Hairston, M.D. and William H. Lee, Jr., M.D. (Charleston) *Amer Surg* 35:135, 1969.

Fungal endocarditis is an unusual and potentially frequently fatal complication of cardiovascular surgery. Predisposing factors are the repeated exposure of the entire blood volume to possible contamination in patients on extracorporeal circulation, the frequent use of prolonged antibiotic coverage in the cardiac patient, and the increased incidence of endocarditis in patients with underlying cardiac disease. *Aspergillus* and *candida*, the organisms most often encountered, are uncommon pathogens, resistant to conventional chemotherapy, and lethal when the endocardium is infected. The diagnosis was confirmed at autopsy in 7 patients. The site of entry for the infective organism was never positively identified. The only consistent symptom was persistent or recurrent fever of obscure origin that was refractory to antibiotic therapy. Subjective response was malaise, lethargy, and anorexia related to the magnitude of the febrile response. Embolic episodes occurred throughout the disease but could not be correlated with positive blood cultures. Antifungal chemotherapy was ineffective. Debridement of vegetation and removal of infected foreign material is recommended.

GUIDELINES FOR THE ESTABLISHMENT OF A HEARING CONSERVATION PROGRAM IN THE TEXTILE INDUSTRY

THEODORE A. WATSON, M.D.
Greenville, S. C.

Noise is as much an environmental hazard to mankind as are air and water pollution. Dr. Gerald D. Dorman, M.D., A.M.A., president-elect, stated at a recent Congress on environmental health, "that noise can be much more than an annoyance. The sounds that bombard us day and night can be both a physical and psychological danger." Alexander Cohen, Ph.D., of the U. S. Public Health Service, stated that steady state noise exposures in the mechanical industry are very likely to cause hearing loss. Aram Glorig, M.D., the international authority in audiology, has stated the most common cause of permanent hearing impediment in older individuals is exposure to industrial noise. Recent governmental regulations on occupational noise exposure state that protection against the effects of noise exposure shall be provided when the level of noise exceeds 90 decibels (dB) when measured on the A scale of the standard sound level meter. The Walsh-Healey Regulations were effective on May 20, 1969, and are found in Government Regulations No. 50-204.10. They simply state that efforts shall be made to protect employees against sound levels exceeding 90 dB on the A scale. Mr. Charles R. McClure, senior Industrial Hygienist for the United States Department of Labor, made it quite clear at a recent noise symposium that ear plugs alone would not be sufficient in complying with these regulations.

Basic Information Concerning Noise In The Textile Mills

1—It has been my experience that many mill employees have suffered permanent hearing loss due to their exposure to tex-

tile machinery, and in some cases, the 20 and 30-year veterans have suffered communication loss.

2—This hearing impairment is permanent and cannot be corrected with surgery or drugs. Hearing aids, in most cases, have not been effective in improving their ability to understand spoken words.

3—The susceptibility to hearing loss varies from person to person. Those employees who are suffering from hearing loss often go undetected unless suitable hearing tests are employed as a pre-employment and periodic check. There are causes of hearing loss other than noise exposure, therefore, proper medical evaluation is often needed.

4—Because of the nature of the textile machinery, every mill should have a hearing conservation program initiated which should include: (a) noise exposure analysis (b) control of noise exposure (c) measurements of hearing.

Steps In Outlining A Hearing Conservation Program

1—Assessment of noise exposure. The safety engineer or some other electrically versed individual should be made responsible for determining noise levels throughout the mill. The major component of textile noise is steady state and therefore the more specialized equipment necessary in measuring impulse noise is not required. Standard sound level meter with an A scale can be purchased reasonably and does not require a great deal of technical "know-how" to utilize.

Measurements should be made with the meter on slow response at the approximate positions of the employee's most

exposed ear. General measurements should be made in the center of the rooms as well as over "loud spots" such as ventilators and generators. These levels should be made initially more than one time during each shift and on different days of the week until an average level can be determined. Adequate records of the sound levels should be recorded and checked periodically. With the installation of any new machinery or sound isolation equipment, new readings should be taken again. The operation of the weave and spinning rooms is of constant duration, therefore the time an employee is exposed is the same as the time of the work shift.

Table 1**Permissible Noise Exposure**

Duration per day, hours	Sound Level dBA
8	90
6	92
4	95
3	97
2	100
1½	102
1	105
½	110
¼ or less	115

Control Of Textile Machinery Noise

The ultimate in a program of hearing conservation in our mills will be the environmental control of noise exposure. In the development of new plants or additions, acoustical engineers should be consulted. Any new machinery purchased such as looms should have specifications of their running dB levels.

In the existing weave rooms, each machine should have some noise dampening devices such as pads, shock and vibrator absorbers, etc. Attempts should be made to decrease the transmission of noise from machine to machine as well as reverberation from concrete floors and walls. Such things as a three-sided isolation booth in which the employee may stand and observe his loom operation or job, acoustical ceilings and walls would certainly be beneficial in reducing reverberation, or noise reaching the ears of the workers.

The Measurement of Hearing

An organized hearing testing program is the most important part of the Hearing Conservation Program. Pre-employment and periodic follow-up tests of hearing will be needed for all textile employees. This program should be administered by the plant nurse or technician with the aid of the physician.

Persons of normal intelligence can learn the skills necessary for conducting screening tests (hearing level tests) in the textile mills and with some of the newer self-recording devices, the person being tested can administer his own hearing test.

Pre-employment Tests of Hearing Ability

Pure tone air conduction hearing tests are needed for all new employees. Air conduction tests are those in which the test sounds are generated by the earphone and conducted through the ear canal to the eardrum. Pure tone frequencies of 500, 1,000, 2,000, 3,000, 4,000 and 6,000 cycles per second should be tested. This record is then maintained on the new employee and is called an audiogram.

Such a record may show presence of a pre-existing hearing loss and the patient may be responsive to medical treatment. If a pre-employment audiogram shows an average hearing loss of greater than 15 dBs in the speech range, which is the 500, 1,000, and 2,000 cycles per second, the employee should be referred to a physician for an otological examination. In all pre-employment tests, hearing tests should be given at least 16 hours after his last loud noise exposure.

Follow-up Tests of Hearing Ability

Periodic follow-up tests on all textile employees. These can be given on an annual basis. Any complaints related to the ear should necessitate repetition of the audiogram.

Test Equipment

The equipment that will be necessary for proper testing of individuals working in the textile mills is as follows:

An audiometer

A sound enclosure

A record file

Audiometer

There are many audiometers available on the market today; many of them are designed for diagnostic tests rather than for industrial hearing conservation programs. A relatively recent development has been the self-recording audiometer. Its main use has been screening large groups, particularly in industry. With this type of audiometer the person being tested responds to the tone by pressing a button; the button controls the mechanism of the audiometer which then records the person's audiogram. In general, these tests can be done in as little time as three minutes, in which case large groups of individuals can be tested efficiently by one individual. However, its major advantage is that it tends to reduce the errors on the part of the technician and decreases the boredom of repeated manual testing.

The accuracy of the audiometer should be checked regularly. This is usually done by the individual administering the tests using her own hearing and that of several other people as the calibration check at weekly intervals. If the audiometer is found to have a change of greater than 10 dBs at any frequency, the machine will necessitate calibration by the manufacturer of the instrument. The importance

of maintaining proper calibration of an audiometer cannot be overemphasized.

Hearing Test Enclosures

There are no quiet areas in the textile plants that are free from appreciable machinery noise (levels less than 40 dBs). Therefore, a booth is necessary to prevent extraneous noise interfering with the individual being tested. Acoustical treatment of the bathroom or closet is an extremely difficult task and should only be undertaken with the aid of an acoustics consultant. There are very good, and probably less expensive, prefabricated acoustic booths now available which are necessary to isolate the individual adequately while having his hearing tested. These booths should, of course, have adequate ventilation and temperature control provided.

In Conclusion

A properly administered hearing program will need the assistance of trained otological and audiological consultants. In development of future facilities and machinery, the noise levels should be an important consideration. Hearing testing equipment should be properly employed with the help of audiological consultants. Audiograms should be part of each employee's medical records.

Industrial noise is steadily becoming a serious environmental hazard affecting the employee's mental and physical health. Adequate controls are needed now!

REFERENCES

1. Prepared by the Subcommittee On Noise of the Committee on Conservation of Hearing and Subcommittee On Noise Research Center: Guide for conservation hearing in noise, A supplement to the transactions of the American Academy of Ophthalmology and Otolaryngology, Revised 1964.
2. Walsh-Healey Regulation 50-204.10, Occupational Noise Exposure.

TRICHINOSIS IN SOUTH CAROLINA

A Case Report

WILLIAM M. JOHNSON, M.D.

EIS Officer

Columbia, S. C.

Trichinosis is frequently a mild febrile disease caused by the intestinal nematode, *Trichinella spiralis*; however, the clinical spectrum ranges from asymptomatic to fatal infections. The illness is characterized by gastrointestinal symptoms and signs during the invasion and proliferation of the larvae in the intestinal mucosa. Within about one week the larvae migrate via lymphatics into the blood stream and invade the body organs and tissues, causing the variable and major clinical manifestations of trichinosis. Spiking fevers, periorbital edema, and muscular aches and tenderness are classic signs. An increasing eosinophilic leukocytosis is one of the more useful diagnostic findings; however, a muscle biopsy often is necessary to provide conclusive evidence of the disease. Several serological tests are also useful in confirming recent trichinella infections, whereas the trichinella skin test is more useful in screening for past trichinosis. This communication reports a case of trichinosis and describes the salient epidemiologic characteristics of *Trichinella spiralis* infections.

Case Report

C. R., a 30-year-old married Negro female living on a farm in rural York County, developed watery diarrhea, chills, and anorexia on March 2, 1969. By March 5, 1969, she noticed pains in the "calf" muscles while walking. A private physician was consulted on the same day and treated the patient for diarrhea with an antispasmodic.

Periorbital edema developed on March 6, and muscle pains in both biceps and both gastrocnemii muscles developed with such increasing severity that the patient again consulted the private physician on March 9. Tablets for the swelling were ordered and the patient was advised to return on March 14, if not improved. The diarrhea was well under control by the second day of treatment with antispasmodics. Increasing muscle pains were noted in the calf muscles, both biceps, and left neck

muscles, even at rest, and spiking fevers were noted on March 14. Some anterior chest discomfort was also noted prior to admission to the hospital on March 14 for definitive diagnostic studies. The pertinent physical findings included temperature of 104°, pulse 140 per minute, blood pressure 100/60 mm Hg, periorbital and facial edema, and edematous conjunctivae. The admission hemogram revealed 12.8 grams of hemoglobin and a white blood count of 27,000 with 11 percent eosinophils. A second differential on March 20 showed a 29 per cent eosinophilia. A left deltoid muscle biopsy on March 22 confirmed the presence of motile larvae that were not encysted. The patient was placed on thiazide and prednisone therapy on March 22 and within 48 hours showed remarkable improvement in facial edema and frequency of muscle pains.

The patient denied having had headaches, changes in level of consciousness, visual disturbances, and respiratory distress. An electrocardiogram was not obtained.

Personal, Family, and Social History

This patient lives alone with her seven-year-old son except for monthly visits by the husband. Two home grown hogs were slaughtered on December 25, 1968 by the husband. Part of the meat was cured and stored in an ordinary room of the family house; the rest was made into sausage and stored in a deep freezer.

The patient is known to pinch sausage off the roll and eat it raw while preparing a meal. She also doesn't like sausage "well done." Her son and husband eat only well done meat and have not experienced a similar illness. The family had not eaten outside the home during the month prior to onset of this patient's illness. The meat in question has not been consumed by anyone other than the family.

Meat specimens are being processed to confirm the source of this infection; however, a preliminary examination failed to demonstrate larvae. *Trichinella* flocculation tests have been performed on blood

specimens from all three family members. Only the patient's test was positive, with a titer of 1:20.

Discussion

Trichinosis is common in the United States and occurs throughout the world. The incidence of the disease in this country has been declining during the past 21 years.¹ The South Atlantic and the South Central areas have shown the lowest trichinosis attack rates during the past eight years. In necropsy studies² during the period 1931-1942, 16.1 per cent of human diaphragms in the United States were infected with trichinae; in a recent study³ only 4.2 per cent of 5,000 human diaphragms were infected. An analysis of the 67 cases of trichinosis reported in the United States in 1967 shows no sex predilection, no deaths, no seasonal pattern, and a mean age of about 38 years. The

source of infection was most often pork products. However, *T. spiralis* infections have been reported to occur in bears, wild boars, horses, cows, dogs, cats, rabbits, guinea pigs, mice, rats, marine mammals,⁴ foxes, and wolves.⁵

Humans become infected by ingesting uncooked or undercooked meat containing viable larvae. Gastrointestinal manifestations occur within 24 to 48 hours; nausea, vomiting, and diarrhea accompany infection in half the cases. Systemic manifestations of organ and tissue invasion are variable, with fever, muscle pains, and tenderness frequently occurring about 7 to 10 days after ingestion of larvae. Larvoposition in selected tissues and organs is manifested appropriately as invasion occurs.

This is the first case of trichinosis to be reported in South Carolina since 1965.

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COMMON PAIN PROBLEMS DUE TO BURSITIS OR TENDONITIS ABOUT THE LARGE PERIPHERAL JOINTS

WALTER M. BONNER, JR., M.D.*

Pain about the larger peripheral joints is commonly due to bursitis or tendonitis.

The periarticular tissues are most frequently inflamed by chronic or repetitive trauma since the large joints are engaged in weight-bearing or are subjected to violent or abnormal motion.

The tendon sheaths or bursae are also involved by systemic rheumatic diseases such as rheumatoid arthritis and by metabolic diseases such as gout. Bursitis or tendonitis is also associated with degenerative joint disease (osteoarthritis), wherein deformity of the joint surfaces leads to abnormal mechanical strain on the soft tissue. In any of these arthritides the pain arising from the inflamed bursae or tendons may be more disabling than the joint disease itself.

This paper will discuss the pathogenesis of the individual pain problems and describe the appropriate techniques for examination and treatment.

1. *Subdeltoid bursitis* (supraspinatus tendonitis).

In this disease the primary lesion appears to be inflammation of the supraspinatus tendon, which is subjected to trauma in its long course over the head of the humerus. The subdeltoid bursa, which lies between the tendon and the deltoid muscle, is inflamed secondarily. Calcium deposition in the tendon is occasionally visible by x-ray, and is thought to be a result of inflammation rather than its cause.

Early, there is mild discomfort at the

tip of the shoulder, possibly with radiation over the entire deltoid area. Some patients experience pain at the insertion of the deltoid on the humerus. The patient may scarcely notice increasing limitation of motion of the shoulder. A sudden violent movement usually sets forth acute inflammation resulting in excruciating pain and marked limitation of motion. Chronic subdeltoid bursitis is sometimes accompanied by dystrophic changes and pain in the hand, the so-called shoulder-hand syndrome.

Except in indolent, long standing, "burned-out" cases palpation will reveal tenderness just distal to the tip of the acromion (See Figure I). Point tenderness is sharply localized at that site even when pain is experienced at more distal sites over the deltoid muscle. There is limitation of motion or pain on motion on abduction or internal rotation of the shoulder. During the general physical examination special attention should be paid to ruling out referred pain resulting from cervical spine disease and intrathoracic disease. Neurovascular compression syndromes also should be ruled out.

The restoration of normal motion is the chief aim of therapy. Gentle range of motion exercises, which the patient can perform himself, frequently suffice to abolish the pain and tenderness. Short courses of analgesic or anti-inflammatory drugs may be prescribed to facilitate the exercise therapy. In the presence of acute inflammation, injection of the area of tenderness with a corticosteroid mixed with a local anesthetic may be needed before exercise therapy is possible.

Calcium deposits usually disappear

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Fig. 1. Subdeltoid bursitis. Palpation reveals point tenderness at the tip of shoulder, just distal to the acromion. Fig. 2. Bicipital tendonitis. Palpation with the thumb reveals that the tendon of the long head of the biceps is tender. The tendon can be made to move to and fro over the anterior aspect of the shoulder joint.

after the patient has resumed normal movement.

2. *Bicipital tendonitis* (tendonitis or tenosynovitis of the tendon of the long head of the biceps).

Tendonitis or tenosynovitis here is most frequently due to chronic or repetitive trauma, resulting from violent or abnormal motion, as in throwing. The systemic or metabolic diseases rarely cause bicipital tendonitis.

Pain and limitation of motion are much milder than in the case of subdeltoid bursitis. The discomfort is usually localized to the anterior aspect of the shoulder but occasionally pain is experienced over the body of the biceps muscle.

Palpation with the thumb (see Figure 2) will reveal that the tenderness is localized over the biceps tendon, which can be moved from side to side by the thumb. Also, having the patient forcefully supinate the forearm against resistance will cause contraction of the biceps muscle and reproduce pain over the inflamed tendon.

Avoidance of occupational or athletic trauma and resumption of normal motion are necessary for successful treatment. The patient should be encouraged to put the shoulder through full ranges of motion in all directions several times daily. Ultrasound therapy may be employed to reduce pain temporarily and thereby promote the

performance of range of motion exercises. Short courses of analgesic or anti-inflammatory drug therapy may be used. Injection therapy is rarely necessary and is not often successful—probably because it is difficult to deliver the drug into the easily movable target.

3. *Tennis Elbow* (Tendonitis of the common tendon of the extensor muscles of the forearm).

Classically, this is due to the violence of the back hand stroke in playing tennis, but it can be caused by the repetitive trauma of grasping or twisting functions of the hand. Tennis elbow may also be associated with traumatic (degenerative) arthritis of the radio-humeral joint.

In this syndrome pain is of a peculiarly dull achy quality and is aggravated by use of the arm and hand. Anxiety and insomnia are symptoms frequently attributed to the prolonged bouts of pain.

Examination (see Figure 3) reveals point tenderness over the lateral epicondyle of the humerus, at the insertion of the common extensor tendon. Often the patient complains of pain on supination and pronation of the forearm. Occasionally there is loss of 5° to 10° of extension of the elbow, because of pain.

Avoidance of trauma and performance of gentle exercises are necessary for control of this problem. Short courses of

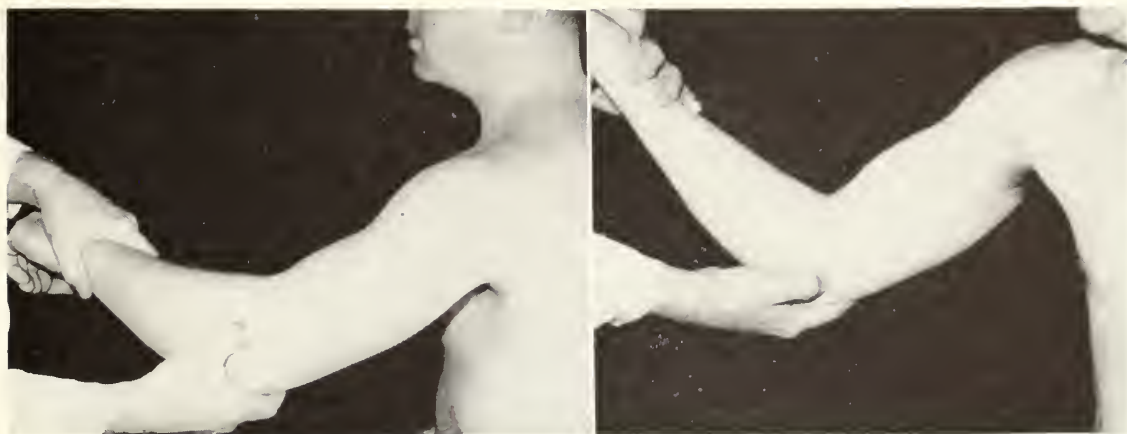


Fig. 3. Tennis elbow. There is tenderness over the lateral epicondyle of the humerus or over the conjoined tendon, just distal to the epicondyle. Fig. 4. Golfers elbow. Palpation reveals tenderness over the medial epicondyle or over the common tendon of the forearm flexors, just distal to the medial epicondyle.

analgesic drugs and longer courses of tranquilizers facilitate exercise. A series of treatments with ultrasound can be used. Injection of the tender spot with corticosteroid and a local anesthetic is often necessary but the other measures should be continued even when this is resorted to.

4. *Golfers elbow*. (Tendonitis of the common tendon of the flexor muscles of the forearm.)

This syndrome is much less common than tennis elbow and is usually related to athletic trauma. Violent contraction of the forearm flexors, as in the golf stroke, is the usual cause.

There is mild pain in the region of the medial epicondyle, aggravated by movement of the elbow or by grasping movement of the hand.

Palpation reveals point tenderness over the medial epicondyle (Figure 4) or over the tendon just distal to the condyle.

Avoidance of trauma and performance of gentle exercises are usually all that is necessary to ensure recovery.

5. *Trochanteric bursitis*. (Tendonitis at the insertion of the gluteal muscles on the trochanter, and contiguous bursitis).

This common pain problem is most frequently recognized in middleaged, overweight females and is probably due to

trauma resulting from excessive weight-bearing. The use of high-heeled shoes may aggravate this. Trochanteric bursitis is also a complication of degenerative arthritis of the hip joint and of rheumatoid arthritis.

The pain is dull and achy in quality and is often referred down the lateral aspect of the thigh. Discomfort is persistent, but aggravated by abduction or rotation of the hip. Lying on the contralateral side, as in sleeping, often intensifies the pain.

Tenderness is detected over the greater trochanter, at the widest point of the hips, or may be detected just posterior to the trochanter (Figure 5).

It is important to rule out hip joint disease. When pain arises from the hip joint, there is usually a flexion contracture of the hip with limitation of extension or painful extension of the hip.

The performance of gentle exercises should be encouraged and the patient should be encouraged to lose weight and to avoid use of high heels. Injection of corticosteroid mixed with a local anesthetic is remarkably beneficial in this syndrome.

6. *Tendonitis about the knee*. (Tendonitis or contiguous bursitis of the insertion of tendons on the tibia).

These tendons and bursae are frequently inflamed in rheumatoid arthritis but



Fig. 5. Trochanteric bursitis. There is tenderness over the lateral aspect of the greater trochanter or just posterior to this. Fig. 6. Bursitis, medial side of knee (anserine bursitis). Palpation reveals tenderness at the insertion of the sartorius muscles on the tibia.

also are damaged by trauma resulting from mechanical faults (flat foot, genu valgus) and osteoarthritis of the knee.

(See Figure 6 and 7.) There may be tenderness over the anserine bursa, over the medial aspect of the knee, where the tendons of the sartorius, semitendinosus and gracilis muscles insert on the tibia. Laterally, tenderness is detected at the insertion of the iliotibial band on the tibia. It is particularly important to look for evidence of an underlying mechanical problem.

Correction of mechanical faults is most important. Injection of the tender sites with a mixture of corticosteroid and local anesthetic is nearly always helpful in relieving the pain temporarily.

Principles of Management of Musculoskeletal Pain Problems

In evaluating any pain problem, and especially pain in and around joints, it is important to determine the precise source of pain and to reproduce it by palpation.

When tendonitis or bursitis is recognized as the cause of pain, the role of abnormal postural strain and the influence of abnormal motion should be determined. The presence or absence of systemic inflammatory disease or metabolic disease should be determined by general physical examination and laboratory studies.



Fig. 7. Bursitis, lateral aspect of knee. There is tenderness at the insertion of the ilio-tibial band on the lateral aspect of the tibia.

Therapeutically, restoration of normal motion and relief of postural strain are most important in permanent control of the pain syndromes.

The patient should be told that he can regain normal motion by performing therapeutic exercises regularly. All joints in the affected area should be put through the full range of motion in all directions, and the exercises should be done for three to five minutes, three times daily.

Analgesic or anti-inflammatory drugs may be prescribed, and ultrasound therapy may be employed, but only as adjuncts in restoring normal motion and function.

When pain is intense and the performance of therapeutic exercises is hampered, injection of corticosteroids and local anesthetics is especially effective. The medication must be injected into the appropriate place, as determined by careful palpation. Both aqueous solutions and crystalline suspensions of corticosteroids may be used. The aqueous preparations are less irritating to acutely inflamed tissues while crystalline suspensions are most effective in long-standing or frequently recurrent situations.

Summary

Pain in the region of the large peripheral joints is frequently due to bursitis or tendonitis, caused by abnormal mechanical strain or abnormal motion.

Treatment, to be effective, involves prevention of trauma and the restoration of normal motion. Ultrasound therapy, analgesic drug therapy and local injection of corticosteroids may be used to relieve pain and permit the performance of therapeutic exercises.



Bronchoesophagology. Putney, F. J. Arch Otolaryn 90:158, October, 1969.

Local and topical anesthesia are employed more often than general anesthesia for endoscopic procedures but the search for the optimum method continues. Detailed studies of the size of the infant trachea have helped determine the proper size of various tubes (endotracheal, bronchoscopic, and tracheostomy) used in the care of this group of patients. Fiberoptic flexible esophagoscopy may have some advantage in enabling more detailed examination of the lower esophagus while the rigid tube is superior in identifying varices.

X-RAY FILM OF THE MONTH

F. H. BLEDSOE, M.D.*



The illustration is taken from an x-ray film of the hand of a 47 year old woman who complained of progressive lethargy and weakness, increased thirst, and polyuria. A 2 cm nodule in the left side of her neck was thought to represent a thyroid nodule. A chest film showed the trachea deviated to the right. She refused surgery but returned later with the complaint of polyuria, polydipsia, and pelvic pain caused by a spontaneous fracture of the pubis. At this time a 3 cm mass was removed from the left side of her neck.

The most striking radiographic changes in the patient with primary hyperparathyroidism are to be found in the bones. Skeletal involvement is detectable in about 30 per cent of patients and when present, represents advanced disease. Generalized bone demineralization, pathologic fractures, and plastic deformities of softened bone may be seen. The skull frequently takes on a characteristic ground-glass or woolly appearance with the inner and outer tables becoming indistinct as the skull becomes deossified. Cysts may appear, especially in the jaw, pelvis, and long bones. These cysts vary from a few millimeters to several centimeters in size, expanding the bone as they enlarge. They may occupy most of the length of a major long bone.

Loss of the lamina dura surrounding the teeth may also be seen. This is a frequently emphasized but inconstant and unreliable sign as it may be seen in normal patients with dental caries and in patients with other diseases, for example, Cushing's disease, characterized by bone resorption. The most striking radiographic finding in the hyperparathyroid patient with bone disease is subperiosteal cortical erosion of bone which is best seen on the radial side of the middle phalanges of the hands. The erosion produces a lace-like or spiculated pattern beneath the periosteum, giving the outer cortex a rather ragged or moth-eaten appearance. The bony tufts of the ends of the fingers may disappear. Subperiosteal resorption may also be seen in other bones, especially at the distal end of the clavicle. Subperiosteal resorption is thought to be pathognomonic of hyperparathyroidism. These bony changes of hyperparathyroidism apparently come about through increased osteoclastic activity associated with excessive amounts of parathyroid hormone.

Other radiographic changes which may be found are soft tissue and vascular calcification, nephrocalcinosis and kidney stones, and pancreatic calcification, all apparently related to hypercalcemia. Synovial and articular cartilage calcification causing symptoms of arthritis have

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been reported rarely. An increased incidence of peptic ulcer has been claimed and disputed, but the possibility of hyperparathyroidism should be considered in the patient with resistant ulcer disease.

Hyperplasia of the parathyroids and excessive hormone production occur in response to the long-standing hypocal-

cemia of advanced renal failure or intestinal malabsorption. The skeletal manifestations of this "secondary" hyperparathyroidism are practically identical to those seen in primary hyperthyroidism and the roentgen appearance of the bones does not permit differentiation between primary and secondary hyperparathyroidism.

Combined external and endoscopic hypopharyngeal diverticulectomy. Putney, F. J., and McStravog, L. J. *Ann Otolaryng* 78:710, August, 1969.

Combined external and endoscopic hypopharyngeal diverticulectomy has the following advantages: (1.) Easier identification and manipulation of the sac; and (2.) Accurate localization of the junction of the diverticulum with the pharyngeal wall, thus minimizing the risk of stenosis.

The diverticulum is more easily identified after passing an esophagoscope into the fundus and is helpful in small diverticuli where the walls blend subtly into the esophageal musculature. Protrusion of the pouch into the neck aids the exposure for excision. Passage of an esophagoscope into the subdiverticular esophagus locates the exact junction of the diverticulum and the esophageal wall so that the line of closure will not compromise the lumen. The diverticulum is excised leaving a cuff of approximately 1/4 of an inch which is closed with an inversion suture.

Editorials

A Supplement on Heart Disease and Exercise

The Journal will make a new departure when it publishes within the next month or so a special supplement reporting the proceedings of the National Workshop on Exercise in the Prevention, in the Evaluation, and in the Treatment of Heart Disease.

This conference, sponsored by the South Carolina Heart Association, the American Heart Association, the South Carolina Regional Medical Program, and the President's Council on Physical Fitness and Sports covered in detail the current concepts of the use of exercise in heart disease.

The participants in the meeting were of the highest caliber; their information is authoritative and up-to-date. Full reports of the papers presented, of the results of the workshops conducted, and of the recommendations of the group will appear in this supplement, which goes to all names on our mailing list.

Tax Credit for Voluntary Health Insurance

Early in November the AMA presented its tax credit proposal to the House Ways and Means Committee. This was the first step toward establishing the position of the AMA in regard to some solution to the problem of health insurance. It is its answer to the general compulsory health insurance scheme initiated by Gov. Rockefeller, Walter Reuther, and others of a socialistic persuasion. Under the program, to be called "Medicredit," persons in higher income brackets would receive cash incentives encouraging them to purchase comprehensive health insurance. Families in the lower income range would receive certificates enabling them to purchase health insurance from any qualified com-

pany or plan, provided the policies offered a minimum of 60 days coverage.

The AMA recommended the establishment of an 11-member Health Insurance Advisory Board which would include the secretary of HEW, the Commissioner of IRS, and other members who would review and monitor the program.

The lines of battle for the establishment of compulsory health insurance are already laid and the proponents are armed to the teeth. Medicine has fought this proposal before and undoubtedly will do so again. It is most important that it be prepared with powerful and convincing arguments against the propaganda of the enemy.

The Medical Examiner

The promotion of the establishment of a Medical Examiner's system in South Carolina has dawdled along for a number of years. It appears that the coroners, jealous of their positions, are generally in opposition. The push for an objective and scientific system is likely to encounter further resistance. The SCMA and the Bar Association support the move vigorously.

The first step would be the establishment of a commission of eight persons representative of medicine and the law. This commission would employ a chief forensic pathologist and develop a state-wide program. The coroner would continue to assist under this system, but would not enjoy the full prerogatives now attached to his office.

Cyclamates

Cyclamates fed to mice in enormous doses over a lifetime appear to produce cancer of the bladder. Perhaps it would be better to say that mice who are taking large quantities of cyclamates occasionally develop cancer. Causative effect is not

proven. No one has shown definitely that cyclamates have produced malformation or other disease even in mice. Virtually, no one has shown that cyclamates produce any disease in human beings. The present concern is with the very remote possibility that cyclamates in very large amounts could produce cancer in the human, but no one has shown in any way that this is likely to happen.

The results of animal experimentation cannot always be interpreted in effects in human beings. Cyclamates have been yanked from the market with dire mutterings about their possibly serious harmful effects. At enormous cost to the manufacturers of foods which include cyclamates as a sweetener, their products have been taken off the shelves. This has cost money, confusion, and apprehension to those confronted with the situation. One might well ask the question why the cyclamates were not investigated when their use was permitted, although one must concede that at that time there was no work available to indicate that they might have any fearful effects, even if these effects are only in the lowly mouse.

After all, cyclamates are not particularly essential. They furnish sweetening for many kinds of food and they have value in diets for those who must pay attention

to the quantities of sugar consumed. Surely provision will be made for these people to obtain supplies by legitimate means, if medical advice indicates that they should use cyclamates. But these are relatively few people and after all there are other substances which can be used with a similar result.

The low-calorie soft drinks have been hit particularly hard. No doubt other means will be found to make these drinks palatable and desirable. One might see a certain advantage in discouraging this great American habit of guzzling sweetened water, but it is almost too much to hope that this addiction can be removed by so simple a measure as the removal of cyclamates. In this case the manufacturers have been more than conscientious. They are the people who have themselves reported the results of the use of cyclamates in animals and they are the people who stand to lose very considerable amounts of money in destroying their current stocks. It may be that this whole thing is quite premature, but for the present one must bow to the dictates of the Drug Administration. The FDA is following the letter, but not the spirit of the law which insists that any substance which has been shown to cause cancer in any form or in any animal is not permissible in food for human consumption.

LINES TO DR. QUINN

Mid Blood and Products of Digestion,
Should Obstetrician Voice Objection
To Squirted Water in His Eye,
To Hear a New Born Baby's Cry?

F. C. O.

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Provisions for the Medical Advisory Committee:
The SCMA Medical Advisory Committee

to the Vocational Rehabilitation Dept. is a sub-committee under the standing committee, the SCMA Committee on Cooperative Activities. Vacancies on the committee are filled by nomination of the S. C. State Agency of Vocational Rehabilitation and confirmation by the Council and the President of the SCMA.

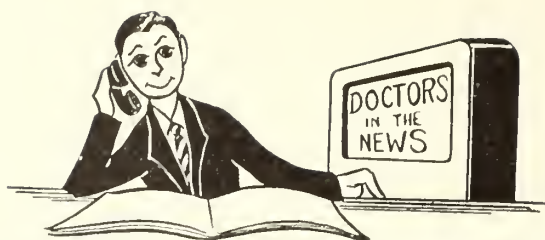
50 YEARS AGO



An article described the meeting of the Medical Society of South Carolina in Charleston and offered news about the faculty and activities at the Medical College. A Fee Bill adopted by Oconee physicians was published in this number. Some of the items were: prescription and advice, first call, \$2.00 or \$3.00; later calls, \$1.00 to \$2.00; normal deliveries \$20 to \$25 with a larger charge of \$35 to \$50 for the use of forceps or version. A tonsillectomy was \$35 to \$50. Appendectomy was not mentioned.

QUIDNUNC

During the 1969 fiscal year, our nation suffered grave and often unparalleled threats to its freedom and internal security. From without, forces antagonistic to a free government sought through espionage and other clandestine-type activities to weaken the United States and its contribution to the defenses of the Free World. From within, shocking excesses of criminal activity—organized and otherwise—and violent attempts to subvert democratic process and promote racial discord lacerated our society. Destructive acts of senseless rebellion by increasing numbers of our youth and widespread contempt for properly constituted authority greatly supported the causes of lawlessness and subversion throughout the country. Annual Report, F.B.I., 1969.



Dr. C. Capers Smith, formerly of Charleston, is now director of the department of neurology for Broughton Hospital. Dr. Smith is consulting neurologist for the western region of the North Carolina Dept. of Mental Health, chief of professional services, recruiting officer for professional personnel for Broughton, chairman of recruitment committee for the western region, chairman of the records committee for Broughton, and chairman of the research committee of the western region. The peripatetic **Dr. Hilla Sheriff** of the State Board of Health will represent the American Medical Women's Association at the meeting of the Medical Women's International Association in Australia in February 1970. **Dr. George C. Broad** of Tuskegee, Ala., has joined the admission and outpatient service at the Charleston Veterans Administration Hospital. **Dr. M. B. Nickles Jr.** has been re-elected chief of staff of the Byerly Hospital. **Dr. K. W. Krueger** is vice chief of staff succeeding **Dr. A. H. Hursey** and **Dr. Frank Kinsey** was elected secretary, succeeding **Dr. H. S. Harrison**.

Dr. Julian M. Burn has been appointed clinical psychologist on the staff of the Charleston VA Hospital, and **Dr. Nessim McCann** of Louisville has been named chief of physical medicine and rehabilitation service. **Dr. Roman J. Machowshi**, a

native of Poland, has joined the Columbia VA Hospital as psychiatrist. Williamsburg County Memorial Hospital held memorial services in October for the late **Dr. Joe M. Brice** of Kingstree. **Dr. Arthur M. Martin Jr.**, a member of the Pathology Department of the Duke University Medical Center, has been appointed director of the Department of Pathology and Laboratory Medicine of the Columbia Hospital. **Dr. Graham Shaw** of Columbia recently was awarded a Director's Citation for his contribution to the Social Security Disability Insurance Program. **Dr. Kamal Basily** of Cairo, Egypt, who came to this country as an exchange student, is now associated with **Dr. Joseph P. Cain, Jr.** and will serve on the surgical staff of Mullins Hospital. **Dr. Charles Aimar** has been named Kiwanian of the Year by the Darlington Kiwanis Club. **Dr. James C. Montgomery** of Kingstree has been elected to membership in AAGP. **Dr. Horry H. Kerrison** of Charleston has announced resumption of his practice of ophthalmology at 31 Smith Street, Charleston. At its meeting in Walterboro, the Coastal Medical Society elected the following officers for 1969-1970: **Dr. Carter P. Maguire** of Charleston, president, **Dr. William E. Fender, Jr.** of Walterboro, vice president, and **Dr. Leon Banov, Jr.** of Charleston, secretary-treasurer.

Woman's Auxiliary Presents "Health Careers Day"

The Woman's Auxiliary to the South Carolina Medical Association is coordinating a Health Careers Day presentation to be held February 21, 1970 in the Exhibition Hall of the Charleston Municipal Auditorium.

Members of the Auxiliary are asking for the participation of Career Advisors and Guidance Coun-

selors in many of the high schools and colleges of South Carolina. Sponsors for booths and displays are being sought.

Mrs. Iona Sanders, Health Careers, Chairman, says that the Auxiliary welcomes ideas and suggestions from all those interested in offering South Carolina students information about what careers are available in medicine and related health fields.

QUEST FOR PROGRESS — The American Heart Association

C. WARREN IRVIN, JR., M.D.

Columbia, S. C.

The word "quest" is defined in Webster's Dictionary in several ways: as a search, a pursuit, an investigation. The word "progress" is defined as an advance, a chivalrous enterprise usually involving an adventurous journey, a gradual betterment, especially the progressive development of mankind. So I would say that our quest for progress is a chivalrous enterprise involving an adventurous journey for the progressive development of mankind. A little verbose and idealistic, even somewhat sentimental, perhaps, and you may think the idealism and sentimentality are "old hat" in our materialistic society. But the Heart Association has held its torch high for some twenty years in the name of ideals and sentiments which have inspired tremendous progress. As we prepare for our next adventurous decades, let us pause to reflect on our achievements and how we have developed into a vital force in the nation, the region, and the community.

All of you here are familiar with the beginnings of the American Heart Association, so you may relax when I promise not to bore you with a historical review. I would like to touch briefly on the recent organization of our regions, however, as much to honor one of our North Carolina leaders, Bill Ivey, who was instrumental in developing the regional concept, as to bring up up to date on current affairs.

Bill Ivey did not put forth a startling new idea when he headed American Heart's Committee on Future Organization and Structure, but drew on previous developments, including the loose rapport

between groups of affiliates beginning as far back as 1954; the general consultant program which started in 1960; the Future Role Report which appeared that same year; and early cooperative efforts such as those of our own region as evidenced by meetings in Williamsburg, Greensboro, and other cities over a number of years. These events led to a freer flow of communication and a growing sense of common interests among affiliates within the regions, including our own.

Today the American Heart regions are an accomplished fact. To say that the going will be smooth sailing from now on would be ludicrous. During this very weekend, for example, we will attempt to solve a knotty problem which has been presented to us by one of our region's most "aristocratic gentlemen." But that's part of our growing pains, and we would not have it any other way. Our adventurous journey for mankind will not be without its storms and doldrums. We can only hope that disagreements will be friendly, not acrimonious.

What are some of the achievements of the Fifties and Sixties—the advances which the Heart Association has helped pioneer and which we can contemplate with pride? First, I think, we can be proud of you and the volunteers who have preceded us. My admiration for those early volunteers who believed in the future of the Heart cause when their only challenge was fund raising, is unbounding. They set an example of dedication which became a magnet to draw ever-increasing numbers of people to our ranks, people like you, with the talents, the skills, and the vision to move us forward. Building on the foundations which they laid down,

Address by Dr. C. Warren Irvin, Jr., Vice-President, American Heart Association Mid-Atlantic Regional Meeting, September 21-23, 1969, Asheville, N. C.

today's Heart volunteers can face with confidence the challenges ahead of us.

Along with the Heart organization itself and those who helped it grow, we can be proud of the medical advances to which it has contributed. The Fifties saw the development of cardiac surgery for congenital heart disease—an outstanding achievement. When we realize that the first open heart operation was performed only about fifteen years ago, it makes us humble to think of what has transpired since then. I recall quite well being at the World Congress of Cardiology in Washington in 1954 when Dr. Walton Lillihei presented the first case of open heart surgery. There were more than a thousand physicians present, I think, and it was hard to believe that such a number could listen so attentively and rapturously as he showed his movies and presented his patients. When he finished, the silence was shattered by a spontaneous burst of applause and hoorays, the like of which I had never heard before. It was one of the greatest moments of medicine and is one of my finest memories.

And now, we are in the era of cardiac transplants. Well over a hundred transplants have been done by this time and the stimulus that this procedure has had on the thinking of physicians is way out of proportion to its actual practical value. Nothing, of course, is all good or all bad. Most of us feel that cardiac transplantation is not now nor ever will be a practical method of therapy for the ill cardiac patient. It may well lead to greater insights into the mechanism of immunity; and will, of course, stimulate the need for a mechanical heart. Those of you who were in Charleston last spring and heard Dr. Cooley's address shortly after his use of the mechanical heart, will recall, I am sure, for many years his dramatic presentation of his side of an unfortunate incident. I would be remiss if I deviated to take sides at this time in this controversy, so I will not do so. However, it should be pointed out that the question of ethics in heart transplants is a mat-

ter of great concern to the Heart Association. Its Committee on Ethics, headed by our revered Dr. Eugene Stead of Duke, led the way with an excellent statement on physicians' responsibilities and patients' rights, both donors and recipients, in heart transplants. Some of these responsibilities and rights are spelled out in the Anatomical Gifts Act which the Heart Association has sponsored in various state legislatures, and which have been enacted into law. This is another achievement which we can view with satisfaction today.

Proceeding with our survey of medical advances sparked by the Heart Association, we see that rheumatic fever is declining as a major threat. Our role here was chiefly one of education of the physician as to better methods of diagnosis and treatment for first and secondary attacks, and of the public as to the warning signs of a strep infection. Rheumatic fever is a disease of poverty. Three times as many children are stricken in poor or ghetto conditions as in the more affluent areas. Why this is so we do not know, but our social planners and others who are working to raise standards of living and medical care at the lower levels must be given the lion's share of credit in diminishing diseases of poverty.

Hypertension is another disease that has been attacked successfully during the Fifties and Sixties. Research, supported in large part by the Heart Association, has developed numerous drugs for the successful treatment of this disorder and surgical methods for correcting poor blood supply to the kidney, when this is a contributing cause. Aldosteronism, first described by Dr. Jerome Conn, is still a somewhat perplexing problem, particularly as to incidence, but its control by the removal of small tumors from the adrenal gland is a decided advance.

What about our most important problem—atherosclerosis? The more you consider this disease, the more interesting, perplexing and challenging it appears. We have simplified the approaches to

therapy and prevention in pinpointing some of the risk factors. On diet, there is now general agreement that lower consumption of animal fat is indicated. On smoking, the evidence is so strong that the Heart Association has taken a firm stand despite offending some of our best friends in advertising and tobacco growing and processing. Our position on exercise doesn't really offend anybody, but you just can't get people to do it for over a month or two and then they are back to their slothful existence again. But perhaps I am wrong about this—I hope so.

Some of my colleagues, particularly in South Carolina, say that some highly useful information will soon appear as the result of a national Workshop on Exercise and Heart Disease held in Myrtle Beach last spring. The proceedings will be published shortly and we'll have a chance to judge. And our physical fitness expert, Warren Giese, has persuaded several groups of businessmen around the state to stick to regular exercise sessions. But in all honesty, we must say that the average person is not yet motivated to do what Dr. Paul Dudley White has been preaching and doing for fifty years.

There are other risk factors which are the subjects of research and education: hypertension, diabetes, overweight, inheritance factors, and others which will continue to absorb our efforts in the future as we try to keep you out of the coronary care unit. And this is another dramatic development of the late Sixties. The coronary care unit has reduced patient mortality in the hospital to about half of what it was prior to this concept of intensive care. It represents a tremendous saving of lives, yet we have a long way to go, because most people die before they ever get to the hospital. A recent and imaginative extension of the coronary care unit is the "flying squad" ambulance, with the equipment and trained personnel to keep the patient alive between the scene of his heart attack and the hospital.

Other exciting developments in which the Heart Association has had a major

part during the past twenty years are vastly improved diagnostic techniques including heart catheterization and arteriography, heart valve and artery grafts, artificial pacemakers, closed-chest cardio-pulmonary resuscitation, artificial kidneys, new methods of treating stroke and rehabilitating stroke patients, use of the phonocardioscan for mass screening of the hearts of school children—I cannot attempt to enumerate them all. But we are still left with the great need: to halt our Twentieth Century scourge by preventing heart attack.

Dramatic achievements are relatively easy to come by. To wit, the landing of man on the moon. And, quickly, before you are misled by my use of the word "easy", I do not at all cast aspersions on the difficulties, technical, physical, and emotional, encountered by those who accomplished that feat. I mean that it was easy to gain support by the American people of huge expenditures of funds for a project of admittedly doubtful practical benefit to mankind because it was so dramatic. What are the chances that the Heart Association could stimulate similar support for the conquest of atherosclerosis? We have to face the fact that the odds are overwhelmingly against it. We have to acknowledge that our way still lies uphill, that progress must continue against the weight of public inertia and apathy, that if giant steps are to be made, they must be through our own efforts and not through generous handouts of tax money. This should not dismay us, for it is the way we have grown in the past, and we know that we can continue on this course. In this setting, what can we look forward to in the next twenty years?

Now, I lost my crystal ball several years ago. If I hadn't, I'd write a newspaper column or bet on the horses. But if you will sprinkle my next comments with several grains of salt, I'll show you what I see in the future.

Let's look at research. As you know, the Heart Association from the beginning has placed major emphasis on research. In

1948, we played a leading role in bringing about the establishment of the National Heart Institute, whose chief function was that of making research grants in the cardiovascular field. In 1951, as part of our research program, we launched something entirely new for any agency, voluntary or Federal—the Career Investigatorship, which supports gifted research scientists throughout their productive lives. I think we will continue to stress the importance of research both by the government and by our own organization. At the present time, the Federal Government, even with recent reductions in its medical research programs, is spending approximately ten dollars for every one dollar spent by American Heart, and I think this trend will continue. Our primary job will remain not that of trying to match or surpass the research expenditures of government, but of seeing that the ten tax dollars are spent wisely and that our one dollar is used for new and experimental research and the development of fledgling scientists. We will want some of our dedicated volunteers to continue working closely with the decision-making bodies of the Federal Government, and the appointment of Dr. Lewis January as a chief spokesman for us in communicating with Washington is a guarantee of good relations. If we become frustrated with the bureaucracy which is bound to grow worse, and begin to withdraw from this difficult task, we will be doing a great disservice to the American people.

This responsibility is not one that can be met without effort. For example, the American Medical Association has done an outstandingly poor job of government relations despite the large amount of money available to it. We do not want to be in this position. Another problem is posed by the universities, where the vast bulk of research funds are spent. Some university policy-makers have recently demonstrated a lack of creativity and positive action in dealing with campus problems, and if I were a congressman, it would give me some pause to think of giv-

ing millions of dollars to institutions which cannot maintain effective control over their faculties and students. These are the difficulties which the Heart Association must be prepared to cope with in acting as a consultant to government bodies.

What do the next twenty years hold for the private practice of medicine and the care of the sick individual? Medicare, Medicaid, and other events in recent years are changing the picture dramatically. One major development was largely influenced by the Heart Association—the regional medical programs. Again, thanks to our independent but cooperative position relative to government, we were able to promote the concept of grants to local agencies striving to meet local problems in delivering health services to the people of a region, rather than having the Federal Government follow its original concept of building new centers for the treatment of heart, stroke, and cancer. The result has been an upgrading of the care of heart, stroke, and cancer patients everywhere regional medical programs have been in effect. And here again, a powerful guiding force has been affiliate Heart Associations which work with these programs. However, because of the stimulus to medical care given by the various Federally-financed activities and because of more widespread health insurance coverage, patients today demand more. Aches, pains, sniffles, and minor disabilities are no longer borne stoically by the average American. The waiting rooms of already overburdened physicians are crowded and hospital beds are in demand beyond supply. In addition to the time which the physician must give to seeing his patients, there is the time which must be spent on paper work when government and insurance forms are involved. Increasingly the doctor's attention must be directed to matters having nothing to do with patient care. As a result, some doctors are withdrawing from the private practice of medicine because the burdens are just too heavy. Some find sanctuary in directing the very government programs which

have helped to create the problem. Some do nothing but physical examinations for insurance. These nine to five jobs seem preferable to the round-the-clock-and-still-behind race of dealing with patients in office, home, and hospital. I do not depreciate physicians who put their energy into government programs and into insurance work, please understand. We need them in these capacities, but all of this means that well-trained para-medical personnel have become a necessity if the American people are going to continue to have the high grade of medical care which they are accustomed to, want, and deserve. The physician simply must have more hands to help with some of his time-consuming chores and free him for his more seriously ill patients.

Sad as it may seem to some, the "beloved old family doctor" has got to go, and I for one will be glad when the public accepts the fact that this admired figure belongs to the past. Let us bury him with great honors along with other previously useful things such as buggies and coal stoves.

And speaking of coal stoves brings me to my final vision of what lies ahead of us in the next twenty years in our continuing quest for progress. How will we look at the total picture of ill health? We have gone through the period of specific etiology, that is, the single cause for a single disease. The pneumococcus causes pneumonia, the tuberculosis germ cause tuberculosis, and so on. But it has become evident over the years that a single cause may not be all that is involved. For example, doctors take most of the credit for the eradication of tuberculosis in the United States. We have drugs to treat the germ specifically and the tuberculosis sanatoria are closed. But think back, and you will realize that even before the advent of streptomycin and the other drugs used to treat this disorder, tuberculosis had begun to decline. Why? I can't give all of the answers, but some are surely more aware of the role of exposure to the germ; the elimination of bovine tubercu-

losis and of focuses of infection in neighborhoods, and perhaps an adaptation of man to the organism and his reaction to it—a form of evolution in the changing reaction of an individual to stress. The same adaptive mechanism may have played a part in the decline of rheumatic fever.

Or think about atherosclerosis, the prime target of the American Heart Association today. Isn't it strange that this disease was virtually unheard of before the Twentieth Century? It is true that a few scientists like William Hunter had angina pectoris back in the seventeen hundreds, but actual heart attacks were not described pathologically or clinically until the early nineteen hundreds. Since then, like a virtual avalanche, it has continued to develop over the last fifty years until now it is the largest single cause of death in Western civilization. Is it possible that the disease was present all the time but doctors were so stupid that they didn't recognize it? It hardly seems possible that scientists capable of studying tissues under the microscope in the Nineteenth Century would have overlooked large infarcts in the left ventricle of citizens suddenly dead of unknown causes or chronic heart dropsy.

It is more likely that man is changing in his reaction to disease, stress, and environment. Furthermore, major ills, like atherosclerosis appear to involve multiple etiological factors. We no longer have a single cause for a single disease, hence prevention will not be found, in all likelihood, in elimination, treatment, or inoculation against a single factor. We cannot continue to seek answers by use of the ultramicroscope to divide the cell into more and more segments. Rather than etiology, we should, perhaps, use the term ecology, which has to do with the relation of man to his environment. And it is my belief that unless physicians and laymen alike pay more attention to the relation of man to his environment, we will not solve the problems presently facing us in medicine. We must abandon the "two

cultures" that C. P. Snow talks about. We must have free communication among the nutritionist, the industrialist, the city planner, historians and visionaries, radicals and hardboiled financiers—in short among all who are involved in making our society a better one.

Previous epidemics, whether they were plagues, polio, measles, or whatever, were controlled by measures largely imposed on the citizenry from above and afar. Little effort on the individual's part was required. But this is not true of atherosclerosis. This epidemic has got to be tackled by getting the individual to change his "good way" of life. And this is a formidable task.

To quote one of my favorite authors, C. P. Snow, again, he said in a recent article that man has never stopped once he has undertaken to solve a technological problem. To wit, again, the trip to the moon. So I believe that formidable as is

the problem posed by atherosclerosis, we can solve it. *You*, as the Heart Association, can solve it by taking the large view, to include not only the bench scientist with his microscope but all of those involved in overall health planning for the community and overall community planning for the healthy. Dr. Rene Dubos has indicated that he doesn't think man will be here after another hundred years unless he changes his attitude toward pollution. This is an exciting challenge for the Heart Association and one which cannot be met by physicians or scientists alone. The laymen Heart volunteers have an opportunity to do something for mankind which is both realistic and idealistic. They can lead the way in building for a future which we may not have unless we act wisely and *now*. I hope that the next two days will encourage you to continue on your quest for progress, your adventurous journey for the welfare of mankind.

RESIDENCY IN GENERAL PSYCHIATRY

The William S. Hall Psychiatric Institute has residency openings commencing July 1, 1970, in the three year general psychiatry program. The program is academically oriented and fully supervised by full-time teaching staff of nine general psychiatrists, three child psychiatrists and two neurologists. The full-time staff is supplemented by teaching consultants in neurology, psychiatry, and child psychiatry and by excellent supportive services in psychology, social work and adjunctive therapies. Salary first year \$11,358; second year \$12,496; and third year \$13,633. Submit inquiries to Director, William S. Hall Psychiatric Institute, Drawer 119, Columbia, South Carolina 29202.

EQUAL OPPORTUNITY EMPLOYER

Hail Britannia !

Announcement that the British United Provident Association (BUPA) has become an affiliate of Blue Shield Plans brings some interesting information to light and recalls many memories.

For more than 25 years critics of American medical care have predicted the end of private practice. A small minority of physicians have argued "why bother to back Blue Shield? - Congress will soon socialize medicine anyway".

Despite the few critics, the great majority of physicians have backed Blue Shield, made it work, and preserved private practice - and now our British cousins are taking a second look.

We all know that Britain has a National Health Service, tax-supported and available to all citizens. Despite this, some 2,000,000 Britons prefer to pay out of their own pockets for their health care insurance, with free choice of physician and hospital - and this in a country with a less than flourishing economy?

BUPA, largest of the British prepayment plans, has 1,500,000 members, about three times the membership of Blue Shield of South Carolina.

Why would a British citizen, entitled to "free" health care from his government, want to pay for a private plan?

The Britons say, "Private medicine will continue to grow in Great Britain because many people are attracted by its advantages...we like the freedom of choice of both the doctor and the place where the treatment is received, the privacy enjoyed, the absence of formal visiting hours and the speed of treatment, all inhibiting factors under the national system."

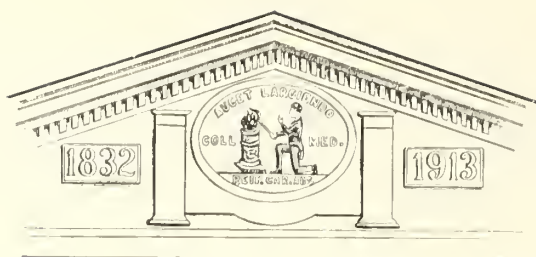
For "privacy" you might read "satisfying doctor-patient relationship," and for "speed of treatment", "quality medical care."

It's encouraging to note that even a nationalized health service cannot stifle the preference of millions to pay for medicine practiced under the free enterprise system. Blue Shield of South Carolina tips its bowler to BUPA, its British cousin in the Blue Shield family.

J. H. Johnson, M.D.
President



Blue Shield
OF SOUTH CAROLINA



Medical University of South Carolina

Robert Holt Green, M.D., a former resident of Charleston and Professor of Medicine at the Yale University School of Medicine has been named Dean of the School of Medicine at the Medical University of South Carolina.

Born in Charleston, Dr. Green graduated from the University of the South, Sewanee. He did post-graduate study at the University of North Carolina and received his M.D. degree from the Johns Hopkins University School of Medicine in 1938.

After interning at Strong Memorial Hospital in Rochester, New York, he was for two years a Fellow in Medicine and Assistant Resident at Lakeside Hospital, Cleveland, Ohio. During World War II he served for four years in the U. S. Navy.

Doctor Green's experience also includes two years as a National Research Council Fellow at the Rockefeller Institute, including a year as resident physician at the Rockefeller Institute Hospital.

In 1947 he was appointed Assistant Professor of Medicine at Yale. In 1960 he went to the New York University School of Medicine as Associate Scientific Director of the Health Research Council of the City of New York. In 1965 he was appointed Professor of Medicine and Chief of the Medical Service at the Manhattan VA Hospital, positions which he held until



R. H. Green, M.D.

returning to New Haven as Professor of Medicine at Yale in 1967.

He has done extensive research on the epidemiological and clinical aspects of a variety of virus diseases, especially influenza and prenatal rubella. More recently his research has been concerned with respiratory viruses and their possible role in the development of chronic bronchitis and emphysema.

Doctor Green is a member of several professional and honorary societies, and at one time served as Editor of the Yale Journal of Biology and Medicine. He is the author and co-author of numerous professional publications in the field of virus diseases.

Charleston's Anti-Drug Campaign

Discussions on the use of drugs presented by Charleston area physicians during the last week of October reached nearly 23,000 students in all the junior and senior high schools in Charleston County.

About 35 physicians participated in the program which was sponsored by the Charleston County Medical Society and the Charleston County public schools.

BOOK REVIEWS

TEXTBOOKS OF PEDIATRICS by Waldo E. Nelson, M.D., Victor C. Vaughan III, M.D., R. James McKay, M.D. W. B. Saunders Co., Philadelphia. Pp 1590 \$21.50.

Textbook of Pediatrics, the ninth edition, a lineal and legitimate descendant of the popular and authoritative pediatric texts of Griffith and Mitchell, Mitchell and Nelson, then Waldo Nelson alone, is blessed with three competent editors and a galaxy of 78 contributors. Its 1590 pages cover just about all one needs to know about pediatrics, and for the slightly forgetful, proves to be an excellent source of reference to reliable sources.

This work is as closely up to date as it is possible for a textbook to be. Comprehensive, readable, and still within the range of the weight-lifter, it is the ideal book for the practitioner, generalist or pediatrician.

J. I. W.

DOCTORS ON HORSEBACK: Pioneers of American Medicine by James Thomas Flexner. Dover Publications, Inc., New York, Pp 338, \$2.50.

Dover Publications, Inc. continues to enlarge its list of books in the category of medical classics as well as related subjects. These books, published in substantial paperback format, are inexpensive and accurate, and pleasing additions to titles not always readily available.

This account of the lives of John Morgan, Benjamin Rush, Ephraim McDowell, Daniel Drake, William Beaumont, Crawford W. Long and William T. G. Morton is in very readable, pleasing form. Although its first edition is over 30 years old, this new product makes available to many a very pertinent and very important segment of American medical history.

J. I. W.

MEDICAL DIRECTOR—Generalist or Specialist. Experience in the care and training of handicapped children required. Experience in the Administration of a Medical Department desirable. Must be licensed or eligible for licensure in South Carolina. Liberal fringe benefits. Salary \$18,000 to \$22,000 depending upon qualifications. Write or apply to Edward A. Rondeau, M.D., Superintendent, Pineland, A State Training School and Hospital, 8301 Farrow Road, Columbia, South Carolina, 29203.

Hemophilia

A high potency, highly purified concentrate of antihemophilic factor (AHF), for the prevention or control of bleeding episodes in victims of hemophilia, has been developed by the American Red Cross under a research contract awarded by the National Blood Resource Program of the National Heart Institute.

The new concentrate contains some 40-100 times as much AHF as does an equal volume of whole blood or plasma. It promises to be a major advance in the medical management of hemophilia A, by far the most common of the hereditary bleeding

diseases that, in the aggregate, afflict an estimated 100,000 Americans.

The concentrate will be manufactured for the Red Cross under contract as soon as remaining legal and logistical problems have been resolved. A license for this purpose was recently issued by the NIH Division of Biologics Standards.

It will be some time before the concentrate becomes available in quantity. However, the new precipitation technique will make quantity production of AHF feasible, enabling solution of the most difficult problems of hemophiliacs at reasonable cost.

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"Fortunately I was able to apply some first aid before you got here, Doctor."

Proceedings of the
NATIONAL WORKSHOP ON EXERCISE
In the Prevention, in the Evaluation, in the Treatment
of
HEART DISEASE

Edited by Loren F. Parmley, Jr., M.D., chairman
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Introduction to Supplement

Reading is to the mind what exercise is to the body. Richard Steele 1672-1729

The affluence of our modern society has encouraged physical inactivity and until recent years the medical profession has done little to alter this trend. Now, there is a renewed awareness of the relation of physical fitness to the maintenance of health. The physician, physical educator, and others who have the common goal of improving health, especially cardiovascular health, have been stimulated by the growing experimental and clinical data which suggest that exercise may be of value not only in the evaluation of cardiovascular disease but also in the treatment and prevention of coronary heart disease and possibly other diseases of the cardiovascular and pulmonary systems. As a result, in these past few years there has been an enthusiastic proliferation of varying types of exercise programs designed to improve physical fitness, particularly cardiovascular fitness. These programs have been embraced by the public and many have been accepted by the medical and paramedical professions without due regard to the limitations and safeguards that should be followed.

Although considerable scientific information has been accumulated by physiologists, physicians, physical educators and others interested in the effect of exercise on the human body, it has been only recently that members of these allied health professions have met on common ground to present their findings. The most recent was the International Symposium on Physical Activity and Cardiovascular Health

held in Toronto, Ontario in October, 1966 under the chairmanship of Roy J. Shephard, M.D., and in his words it resulted in "a greater measure of agreement on the meaning and measurement of fitness . . . and the influence of such fitness on human health was more clearly established." With this foundation, and strengthened by important studies since completed, it seemed in the logical sequence of events that now was an auspicious time to try and resolve the many divergent views concerning exercise in the hope that practical and medically acceptable guidelines might be established for those who prescribe, supervise or desire exercise programs.

Thus this invitational conference was conceived within the programs of the South Carolina Heart Association. Its purpose was to provide a forum where physicians, physical educators, physiologists and others interested in exercise as it relates to cardiovascular fitness and heart disease might meet to develop practical guidelines concerning exercise for the busy practicing physician as well as others with similar responsibilities in this area. Designed as a workshop with the specific goal of establishing guidelines, it was necessary to limit the conference to working units that might reasonably be expected to accomplish the goals that had been set with the realization that to do so many differences needed to be resolved. Obviously, final solutions to many of the questions concerning the effect of exercise on the cardiovascular system must await further study. Yet to defer a critical eval-

uation of the considerable information now at hand merely because solutions to many problems were not possible at present was not believed warranted. The need for guidelines on exercise was here and now! Those areas where controversy was found to be too great for any form of agreement were to be identified so that future research efforts might be properly directed.

On the 6th of May 1969, at Myrtle Beach, South Carolina, in the center of the Grand Strand of the Carolina beaches made by nature to promote exercise and health, the conference on exercise in the evaluation, the prevention, and the treatment of heart disease was convened.

The initial session was a symposium arranged for the purpose of acquainting the conferees, composed of a heterogeneous group from the different health professions, with the varied aspects and the controversial concepts of the subject of exercise, whether or not they were related to the individual's specific areas of interest. This was to prepare all for the deliberations of the Workshops to follow the next day. The subject material of the symposium was grouped into five categories that were designed to serve as a preface to the five workshops: (1) Exercise and Performance Evaluation, (2) Exercise and Stress Testing, (3) Exercise Programs for the Prevention of Heart Disease, (4) Exercise and the Treatment of Heart Disease, and (5) Exercise and Cardiovascular Rehabilitation.

The Proceedings of this conference contain the papers presented at the symposium, the reports of the workshops and their recommendations, concluding with a summation of guidelines for practicing

physicians and others who recommend or supervise exercise programs. The appendices serve to present specific material on exercise and rehabilitation programs in detail for those who wish to use them as models for prescription.

These guidelines and recommendations do not represent final answers but merely a well-thought-out step along the way to aid those who now have the responsibility for recommending or supervising exercise programs or using exercise in the evaluation of patients with known or suspected heart disease. Recognizing that future developments may alter present concepts, as they have many times before, it is expected that there will be additional conferences of similar nature. We trust they will be conducted in the intellectually congenial atmosphere and pleasant environs that marked this Myrtle Beach Conference where it was mellowed by the blue sea, warm sun, and white sand of the Grand Strand.

It is hoped that this conference and this report of its Proceedings will contribute to a better understanding of the value of exercise in the evaluation, prevention and treatment of heart disease, and that the guidelines developed prove to be of worth to those who seek them. If nothing else, the Myrtle Beach Conference was an unqualified success in bringing together many persons of diverse disciplines who had a common interest in exercise and heart disease. There a free exchange of ideas and discussion of differences ensued and all were enriched by the deliberations. May those who read these Proceedings find in them reason to benefit in like measure.

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Exercise and Performance Evaluation

WHY EVALUATE PERFORMANCE?

G. BLOMQVIST, M.D.*

Definition of physical performance capacity.

Physical performance capacity is a complex entity. The level achieved is determined for any given task by the ability to meet specific demands imposed on (1) aerobic and anaerobic mechanisms for energy delivery, and on (2) neuromuscular and (3) cortical function. Neuromuscular function includes strength, coordination, and technique, and cortical function includes motivation and the ability to perform despite sensations of discomfort or pain.

The relative importance of the components varies with the task. The relation between aerobic capacity or maximal oxygen uptake and proficiency in a variety of sports¹ is illustrated in Fig. 1.

Performance evaluation in clinical and physiological exercise laboratories has been directed primarily toward measurement of aerobic capacity. Some factors influencing aerobic capacity² are displayed in Fig. 2.

The range of the test methods currently in use is limited. Differences in type of work and in environment and variations induced by metabolic factors are minimized. Measurement of aerobic capacity is essentially a test of the function of the oxygen transport system, primarily the circulatory system. Pulmonary function is probably limiting only at high altitude (oxygen diffusing capacity)⁴ and in the

presence of significant bronchopulmonary disease or extra-pulmonary conditions restricting ventilation.

Performance Evaluation In Normal Subjects

Direct measurements of maximal oxygen uptake and various indices relating to aerobic capacity derived from submaximal

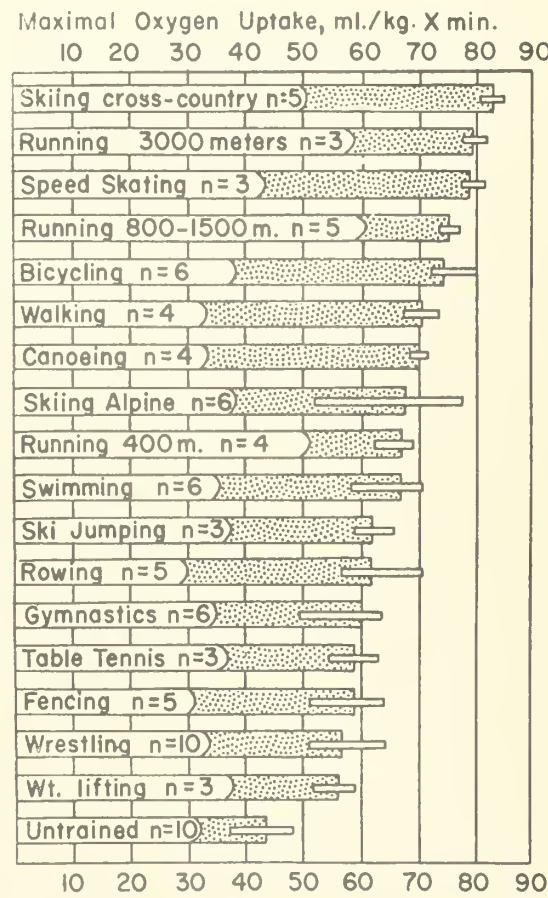


Fig. 1. Maximal oxygen uptake in ml/kg x min. for members of Swedish national teams in various sports events. Bar indicates range within each group. Graph adapted from B. Saltin and P. O. Astrand.¹

*Work performed during tenure of an Established Investigatorship from American Heart Association. Supported by grants from USPHS (HE 06296) Texas Heart Association, and Southeast Texas Health Foundation.

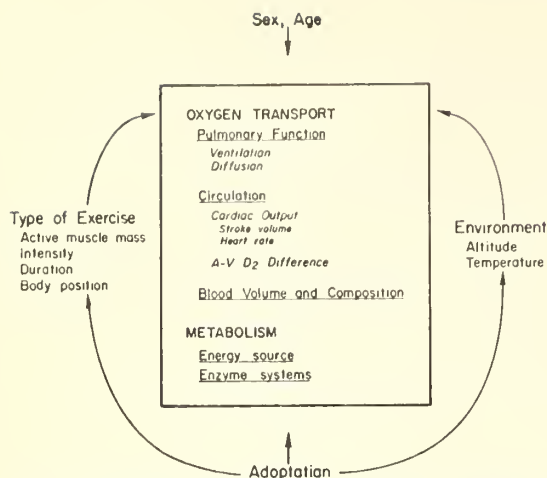


Fig. 2. Factors determining capacity for aerobic muscular exercise (modified after P. O. Astrand²).

tests may be used to characterize the degree of physical fitness of normal subjects as individuals or population groups. The results may also be employed to document and quantitate the effects of various interventions, e.g. changes in habitual level of physical activity as illustrated by the data presented in Fig. 3 from a study recently carried out in our laboratory.³ Five young men, two of them engaging in competitive sports, and three being sedentary, were studied before and after a three-

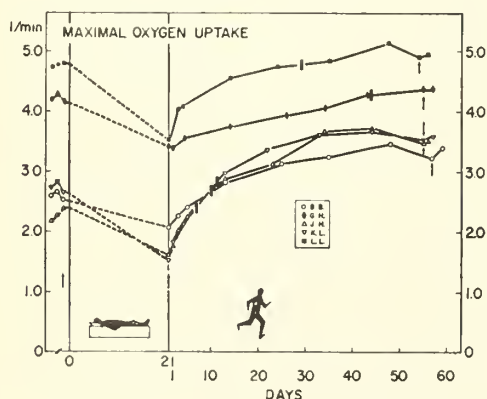


Fig. 3. Changes in maximal oxygen uptake with bed rest and training. Individual data before and after bed rest and at various intervals during training. Heavy bars mark the time during the training period at which the maximal oxygen uptake had returned to the control value before bed rest.

From Saltin and others³ Reproduced with permission from the publishers of *Circulation*.

week bed rest period and then subjected to a vigorous physical training program. Measurements at the onset of the study differentiated clearly between the subgroups of active and sedentary subjects. The period of bed rest induced a 26 per cent decrease in aerobic capacity. The three sedentary subjects at the end of the training period had exceeded their control value by 33 per cent. The results of repeated measurements of maximal oxygen capacity during the training phase were also used as a guideline for continuous updating of the training program. The effects of both immobilization and training were in this group closely reflected by submaximal tests.

An objective evaluation of performance capacity is strongly recommended for any sedentary subject about to start systematic physical training, even in the absence of any symptoms or findings suggesting cardiovascular disease. Quantitative initial data on performance capacity will aid considerably in the design of an optimal program and provide a baseline for objective evaluation of the results. The initial tests should include recording of ECG and blood pressure during and after exercise to uncover any signs of latent coronary disease, any arrhythmia, or excessive response of blood pressure to exercise. If a submaximal test is to be used it seems reasonable to suggest that the test is carried at least up to a level corresponding to the highest intensity expected during training.

Performance evaluation in patients with heart disease.

Clinical applications of exercise testing used to be limited largely to two areas: (1) measurement of physical work capacity to provide a basis for occupational counselling and rehabilitation, and (2) electrocardiographic stress testing. It is now recognized that exercise represents a most accurate and convenient means of imposing a quantitated load on the oxygen

transport system of the body, and that maximal oxygen uptake (determined directly or estimated from submaximal test), or the oxygen uptake at a load producing significant symptoms,^{5,6} are useful indices of the functional capacity of the circulatory system. The acceptance of these concepts is reflected by the current clinical use of exercise testing for a variety of purposes combining aspects of "stress testing" with the evaluation of physical work capacity.

Performance testing in the context of work evaluation continues to be a most important application. There is good correlation between performance capacity as measured in the laboratory and the patient's ability to meet occupational demands. Levels of energy expenditure of more than 40 per cent of capacity are poorly tolerated.⁷ Critics have frequently pointed out that there is little resemblance between occupational demands and the type of work usually performed during an exercise test. Even jobs classified as being heavy tend to require high levels of energy expenditure only intermittently and for periods shorter than a minute. Sustained efforts at a steady or increasing loads during periods of three minutes or more is the rule in the exercise laboratory but the exception in most real life work situations. Nevertheless, the work output in strenuous occupations, e.g. in the lumber industry, correlates well with maximal oxygen uptake. A manual laborer free to regulate his own pace will also frequently select an average intensity level corresponding to approximately 40 per cent of maximal capacity.⁷

The results of performance tests will support a conventional functional classification according to Heart Association criteria in a majority of patients, but striking discrepancies are by no means rare. Table I compares functional class with work load required to produce angina (from Bjork et al) in a series of patients

Table I

Correlation Between Clinical Functional Classification and Maximal Work Capacity

W	•				
max	No. of Functional classification: class				
(kpm/min)	cases	II	IIIA	IIIB	IV
<250	18	2	5	10	1
250-499	21	1	12	6	2
500-749	12	3	6	3	—
750-	2	1	1	—	—
Total	52	7	24	19	3

*W max=highest workload tolerated for at least 4 minutes bicycle exercise. Limiting factor, angina pectoris and/or ECG response. Work loads of 250, 500, and 750 kpm/min. correspond to oxygen uptakes of approximately 0.8, 1.3, and 1.8 L./min.

From Bjork et al.⁸

who had significant coronary disease according to angiographic study.⁸ Our own experience is similar.

Exercise tests may be repeated at frequent intervals and provide a method for objective documentation of the natural course of the disease and of the results of medical or surgical intervention. As an example, we are now in our laboratory using repeated graded exercise tests carried up to a level precipitating angina to monitor the effect of myocardial revascularization and, in another series, to evaluate the effects of a new beta-blocking agent.

Modern data-acquisition and processing techniques have extended the range of indirect techniques that may be used during exercise. Current methods in exercise electrocardiography will be discussed later during this session. Preliminary studies in our laboratory indicate that cardiographic records reflecting the mechanical activity of the heart, i.e. phonocardiograms and apexcardiograms, can be obtained during exercise and may provide useful information not available in the ECG. It also seems likely that reliable indirect methods for determination of cardiac output will become available. Combined with methods for rapid gas analysis

and on-line data processing they will greatly increase the power of exercise

testing both as a scientific and as a clinical tool.

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AN INTRODUCTION TO EXERCISE AND PERFORMANCE EVALUATION

A review of the various methods for determining energy expenditure during physical activity would include a variety of methods not all of which are applicable to subjects likely to be selected for study in projects related to coronary heart disease. Such a list would contain a range in approaches from such simple ones as tabulation in an activity diary of what the subject had done to complete measurements of energy balance in a calorimeter. (Tables 1 and 2)

Table 1

Methods for Assessing Energy Expenditure

Activity Diary
Activity Survey (Observer)
Indirect Heat Loss
Direct Heat Loss
Indirect Heat Production (Vo_2)
Activity Related (Pedometer)
Body Fat and Lean Tissue Loss

It is obvious from appraisal of current projects that only one of these methods for measuring energy expenditure has been widely applied, i.e., the indirect as-

ELSWORTH R. BUSKIRK, Ph.D.*

Table 2
Indirect Methods for Assessment of Energy Expenditure

Variable	Transducer
Accumulated Heart Rate	Electrodes
Accumulated Ventilation Volume	Respiratory Flowmeter
Distance Traveled	Pedometer or Measured Course
Accumulated Knee Flexions (Rotation)	Electrogoniometer or Potentiometer
Acceleration—Deceleration Patterns of Body Parts	Accelerometer
Accumulated Force Exerted on Sole of Shoe During Movement	Piezo Electric Crystal or Strain Gauge

essment of heat production through measurement of oxygen consumption (Vo_2). Since Vo_2 is directly related to heat production and energy turnover under a wide variety of experimental conditions, this method can be regarded as quite useful for clinical testing and research.

To measure Vo_2 and to establish the physiological strain associated with exercise, a large number of ergometric devices have been devised. Some of these are listed in table 3. Those of us who have been associated with exercise physiology for a number of years have made meas-

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urements of energy exchange using each device listed. In terms of general applicability to stress testing, the bicycle ergometer and the treadmill have become methods of choice, because one can quantify the workload in a prescribed mode for a given subject or a group of subjects and obtain comparable physiological information from day to day.

Table 3**Ergometric Devices**

Treadmill
Bicycle Ergometer
Steps or Staircase
Track or Prescribed Course
Rowing Machine
Swimming Pool

There are a number of gross variables that affect performance and modify results obtained from methods commonly employed to assess physiological strain.

Table 4**Gross Variables Affecting Performance**

Age
Sex
Growth, Development & Maturation
Body Size
Disability
Physical Condition
Environment
Work Task
Apprehension
Motivation
Pregnancy and Lactation

These variables are listed in table 4. For example, if a standard exercise regimen is performed by a 40 year old obese lady whose occupation is a ticket seller in a theatre booth and who is pregnant and apprehensive about performance of the test, the results would be quite different than those obtained on an 18 year old college student who is active in sports and regards that exercise test as a "breeze." Yet, all too often in comparative studies we overlook this interindividual variation in background and status and confine our attention to mean trends obtained from dissimilar people. Even when a subject is used as his own control in a physical conditioning study, he may undergo changes in his total environment brought

about by all associated intrapersonal contacts. These contacts may be quite diverse and produce changes in diet, attitudes, and even sexual activity.

Although a complete assessment of exercise and performance evaluation is not intended, I wish to mention briefly some of the factors and principles that should be considered as you listen to the presentations by others and participate in the discussions that will follow.

Table 5**Classification of Physical Effort**

Classification	V	Vo ₂	Mets	H. R.
Very light	10	0.5	2.5	80
Light	10-20	0.5-1.0	2.5-5.0	80-100
Moderate	20-35	1.0-1.5	5.0-7.5	100-120
Heavy	35-50	1.5-2.0	7.5-10.0	120-140
Very Heavy	50-65	2.0-2.5	10.0-12.5	140-160
Unduly Heavy	60-86	2.5-3.0	12.5-15.0	160-180
Exhaustive	85	3.0	15.0	180

V=ventilation value in liters/min.

Vo₂=oxygen consumption in liters/min.

Mets=multiples of resting metabolic rate

HR=heart rate during exercise

Adapted from Buskirk, E. R.¹

We glibly employ such terms as light work, heavy work, etc., without giving much thought to a more stringent classification of physical effort. Numerous schemes for the classification of effort have been proposed, but the one given in table 5 has been helpful to us. Here work done by healthy men in the age range 25 to 60 years has been classified on a scale from very light to exhaustive, and the associated physiological data are provided. Ranges in these data indicate that not all men yield identical values. For men in the upper middle years, sufficient data have only recently become available to facilitate construction of a more precise classification for them. For most healthy men work below a Vo₂ of 2.0 l/min., 10-Mets and 140 heart rate can be regarded as submaximal; although numerous exceptions can be listed.

Various types of tests have been used to assess physical performance with ergometers, particularly the treadmill and bicycle ergometer (table 6). Examples of

Table 6
Types of Tests

Continuous Fixed Level	
Intermittent Fixed Level	Legs
Continuous, Progressive	Arms
Intermittent, Progressive	Arm & Legs
Submaximal	Arms & Legs & Hip
Maximal	Flexors & Extensors

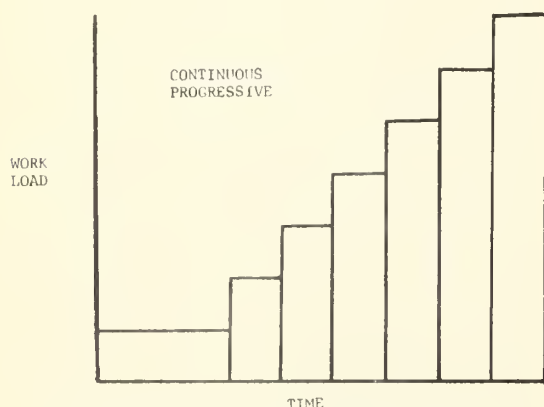
two commonly employed tests are illustrated in figures 1 and 2. Not all tests are equally useful for testing various types of subjects or patients. For doubtful cases, light or moderate submaximal work can be employed after sufficient practice has assured the investigator that the person is sufficiently familiar with the ergometer to provide useful test data. A suggested order for test scheduling is provided in table 7.

Table 7
Order of Test Scheduling Feasibility for Patients

Low Level Submaximal
Intermittent Submaximal
Intermittent Progressive
Continuous Progressive

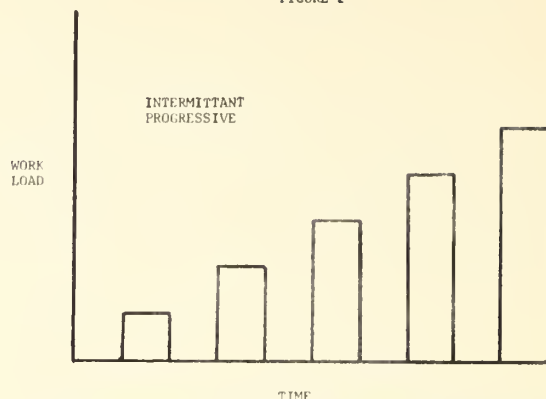
The energy cost of ergometry is largely dependent on the rate at which work is done, the body weight transported, and/or the load imposed. Various investigators have provided useful tables, figures, and nomograms for the estimation of energy expenditure. The data of Goldman and

FIGURE 1



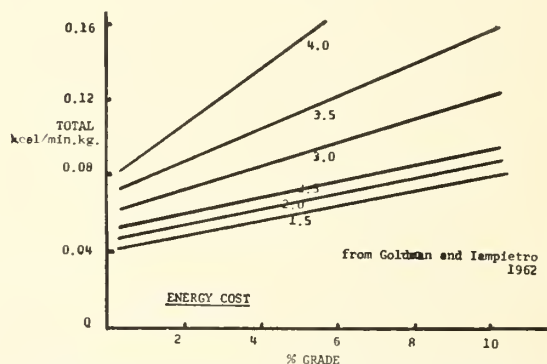
1. A continuous work test designed to increase the work load progressively on a temporal basis following a warm-up period of light work. Work can continue to exhaustive levels or be stopped at some predetermined load.

FIGURE 2



2. An intermittent work test in which a work rest regimen is employed. Work load is increased progressively with each bout of work. The rest periods can be varied to allow partial or complete recovery.

FIGURE 3

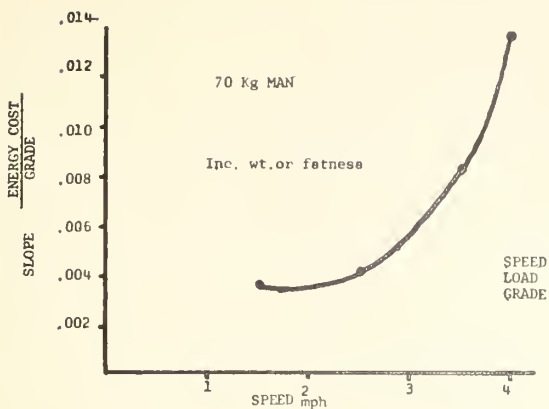


3. Graph for estimating energy costs of walking at speeds from 1.5 to 4.0 mph and grades up to 10%. Adapted from Goldman and Iampietro.²

Iampietro² for treadmill walking are provided in figure 3. The regression lines are linear for speeds ranging from 1.5 to 4.0 mph over the per cent grade range from zero to 10.0. The energy cost per grade increment in relation to speed is plotted in figure 4. Above speeds of 2.4 mph the energy cost of each grade increment increases progressively. The curve shifts to the left for heavier or fatter men.

As work becomes harder and a larger fraction of the aerobic capacity (Vo_2 max) must be utilized, the duration of work is reduced. The average plot of the duration of work in relation to its intensity as measured by the per cent of Vo_2 max required is shown in figure 5. This

FIGURE 4

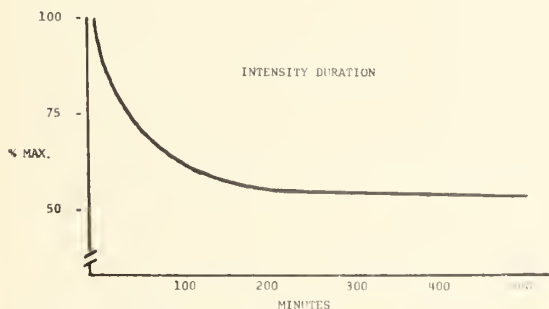


4. Energy cost during grade walking in relation to walking speed. Adapted from Goldman and Iampietro². Increased load transported as obesity tissue would shift the curve to the left. Slope refers to the slopes of the regression lines in figure 3.

curve shifts upward and to the right as physical condition improves. It is important to note, however, that work above 50% of one's Vo_2 max (aerobic capacity) is difficult for most men to perform for more than two hours and work above 75% of Vo_2 max is difficult to perform for more than 15 to 30 minutes.

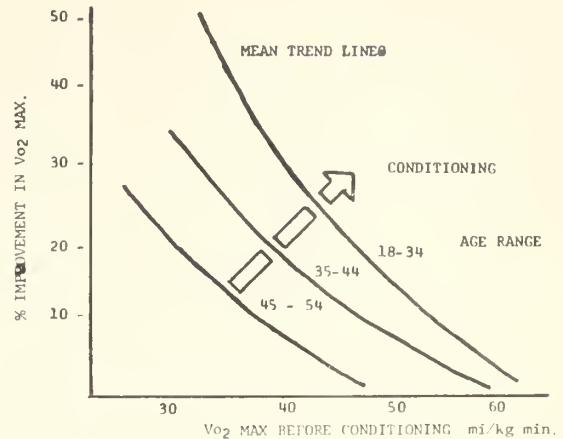
A rough estimate of the possible improvement of Vo_2 max with physical conditioning as related to age and the initial level of physical condition as measured by the Vo_2 max/kg min. is provided in

FIGURE 5



5. Schematic intensity—duration curve for walking or running. The higher the aerobic and anaerobic demands the shorter the period of exercise before exhaustion. Improved physical condition increases both the maximal work intensity that can be tolerated as well as the length of time that one can engage in high level work.

FIGURE 6



6. Schematic presentation of the per cent improvement in aerobic capacity (Vo_2 max) in relation to the aerobic capacity before conditioning. Mean trend lines are presented for 3 age groups of adult men. Conditioning designed to improve cardiovascular-respiratory fitness shifts the curve for each age group.

figure 6. Those who are younger can increase their Vo_2 max more than those who are older but healthy men can be conditioned at any age. Greater improvement is shown by those who have low aerobic capacity prior to conditioning.

In this brief review, I have provided a description of various exercise procedures as well as some simple ways for classifying physical work. It is difficult to predict individual work capacity without knowledge of the individual and his responses to more than one work load or exercise test. Although interindividual variability is increased by coronary heart disease, many patients with healed myocardial infarctions can be conditioned and their work capacity increased. Methods for improving man's physical condition and testing it will, I'm sure, be a matter for continued investigation and will be discussed at length for the next two days as various investigators discuss their pet schemes for assessing man's capabilities.

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THE RELATIVE ENERGY REQUIREMENTS OF VARIOUS PHYSICAL ACTIVITIES IN RELATION TO PHYSIOLOGICAL STRAIN

HAROLD B. FALLS, Ph.D.*

With modern laboratory instrumentation it is relatively easy to make estimations of energy expenditures during many physical activities by direct calorimetry measurements of body heat production or by indirect estimations from oxygen consumption, heart rate, and/or pulmonary ventilation. The indirect measurements are then transformed to kilocalories of energy expenditure by utilizing standard caloric equivalents for oxygen consumed. The general area of measurement is human calorimetry, and it is discussed in most textbooks on medical physiology.

Measurements taken in this manner result in the establishment of tables of relative energy requirements (Table 1).

Another method of expressing the rela-

tive energy requirements of physical activities has been devised by Wells, Balke, and Van Fossan¹ and is presented in Table 2. Their method employs the effect that the activity has on the body's homeostasis.

In Figure 1, an attempt has been made to combine the classification scheme of Wells, Balke, and Van Fossan with energy expenditure values reported at various places in the physiological literature.

In addition to the classifications of Wells, Balke, and Van Fossan, the additional classification of rest has been added so that one can compare the energy expenditure of this situation with that of the various physical activities. Classification 1, which is mild activity requiring up to 10.5 ml O₂/kg/min or 4 kcal/min, includes such activities as volleyball. Classification 2—moderate activity—requiring between 10.5 and 21.0 ml O₂/kg/min and resulting in an energy expenditure up to 7.5 kcal/min covers such activities as baseball, tennis, dance, golf, and calisthenics. Classification 3—termed optimal activity by Wells, Balke, and Van Fossan—requires an O₂ consumption of between 21.0 and 28.5 ml/kg/min resulting in a kcal expenditure up to 10.0/min. Squash and handball are included in this classification. Classification 4—strenuous activity—requires an O₂ intake of 28.5 to 35.5 ml/kg/min with an associated energy expenditure up to 12.5 kcal. Jogging and swimming the back and breast strokes fall into this classification. Classification 5 is the maximal category requiring an O₂ consumption between 35.5 and 43.0 ml/kg/min. Typical activities of this classification are running, and swimming the crawl stroke. The energy expenditure is up to 15 kcal.

Classification 6 under the Wells, Balke, and Van Fossan scheme is the exhausting

Table 1

The Kilocalorie Energy Expenditure Per Minute
For Typical Sporting Activities

Activity	Energy Expenditure (kcal/min)
Canoeing, 2.5 mph	3.0
Volleyball	3.5
Baseball	4.5
Ping pong	4.6
Calisthenics	4.7
Golf	5.0
Archery	5.0
Dancing (rhumba)	7.0
Tennis	7.1
Horseback riding (trot)	8.0
Horseback riding (gallop)	10.0
Mountain climbing	10.0
Swim (breast stroke, 45 yd/min)	10.0
Squash	10.2
Cross-country running	10.6
Swim (backstroke, 45 yd/min)	11.0
Handball	11.0
Cycling, 13 mph	11.1
Swim, crawl (55 yd/min)	14.0
Skiing, level	15.9
Sprinting	23.0

(Adapted from Banister and Brown 1968 and Passmore and Durnin 1955.)

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RELATIVE ENERGY REQUIREMENTS

Table 2

Work Classification of Wells et al

Classification of work	Pulse rate/min.	Metabolic rate O ₂ (cc./min.)	Cal./min.	Ventilation Volume Rate (liters/min.)	R Q	Lactic acid in multiples of resting value	Time of duration work can be sustained
I. Light							
1. Mild	<100	<750	<4	<20	<14	.85	Normal
2. Moderate	<120	<1,500	<7.5	<35	<15	.85	Indefinite. Within Eight hours daily on the normal job. limits
3. Optimal	<140	<2,000	<10	<50	<16	.9	<1.5x Eight hours daily for few weeks (seasonal work, military maneu- vers, etc.).
II. Heavy							
4. Strenuous	<160	<2,500	<12.5	<60	<20	.95	<2x Four hours 2 or 3 times a week for few weeks (special physical train- ing).
5. Maximal	<180	<3,000	<15	<80	<25	1.0	<5-6x One to two hours occa- sionally (usually in com- petitive sports).
III. Severe							
6. Exhausting	180+	3,000+	15+	120+	30+	1.0+	6x or more Few minutes; rarely.

(From Wells, Balke & Van Fossan (1957). Reprinted with permission of the American Physiological Society.)

category requiring an O₂ uptake above 43 ml/kg/min with an energy expenditure above 15 kcal/min. Sprinting would be an example of an activity falling within this classification.

In addition to sporting activities the

ranges for some typical occupational activities have been included. Much industrial work requires between 6 and 10 kcal/min energy expenditure, and these jobs would fall into categories 2—moderate activity and 3—optimal activity.

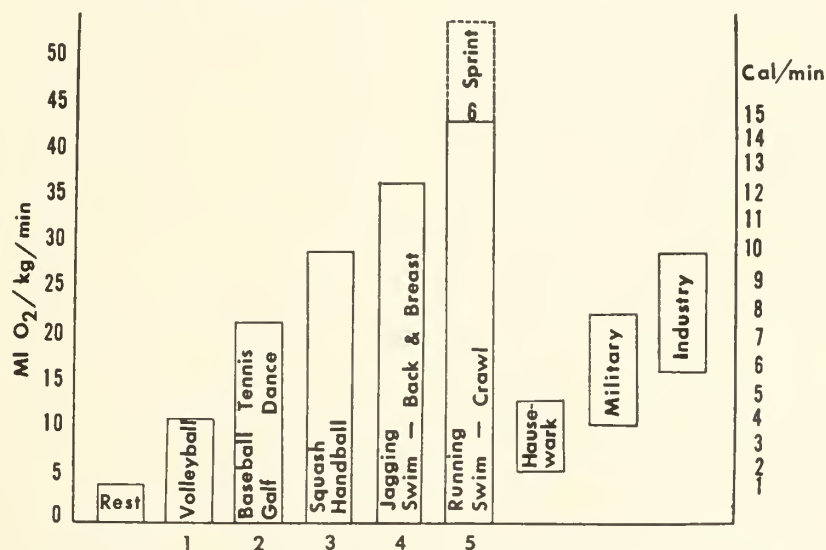


Fig. 1. Work classification scheme of Wells, Balke, and Van Fossan (1957) presented in relation to O₂ uptake in ml/kg body weight/min., kcal. expenditure/min., and showing the placement of various physical activities within the categories.

Most military activities would range between 4 and 8 kcal energy expenditure. They would mostly be classified as moderate activity. Housework generally requires an energy expenditure below 5 kcal/min, and these activities would fall mostly into the mild classification.

The point I wish to make in the remainder of this presentation is that the relative effect an activity has on the individual in terms of circulatory load must be viewed in relation to his or her physical working capacity. As an example, running 2 miles in 12-13 minutes—quite a chore for most middle-aged men—would be child's play for someone like Jim Ryun. As a matter of fact, it wouldn't seriously tax his oxygen transport mechanisms.

According to Banister and Brown,² 50% of the maximal aerobic capacity is the upper limit of the optimal work load for a one hour period. If work is continued at this rate for a longer time period, disturbances in physiological equilibrium will occur.

Work by Balke³ has shown that even people in superior physical condition cannot sustain work for daily 8 hour shifts if it requires more than about 40% of the maximum working capacity. Other work physiologists have claimed this allowable maximum is closer to 33% of the maximum working capacity.⁴⁻⁶ Individuals in average condition can sustain daily work at only about 25% of their maximal working capacity without undue physiological strain, whereas, those in poor condition (a maximum physical work capacity 75% of the average) could sustain work at only about 20% of their maximum capacity.⁷

Figure 2 illustrates the inter-relation between the maximum physical work capacity of the male and his one hour and sustained working capacities. The upper dashed line (at 45 ml O₂ uptake/kg/min) represents the average maximal work capacity for a young adult male.^{8,9} The lower solid line represents the maximal work capacity for a young adult male who

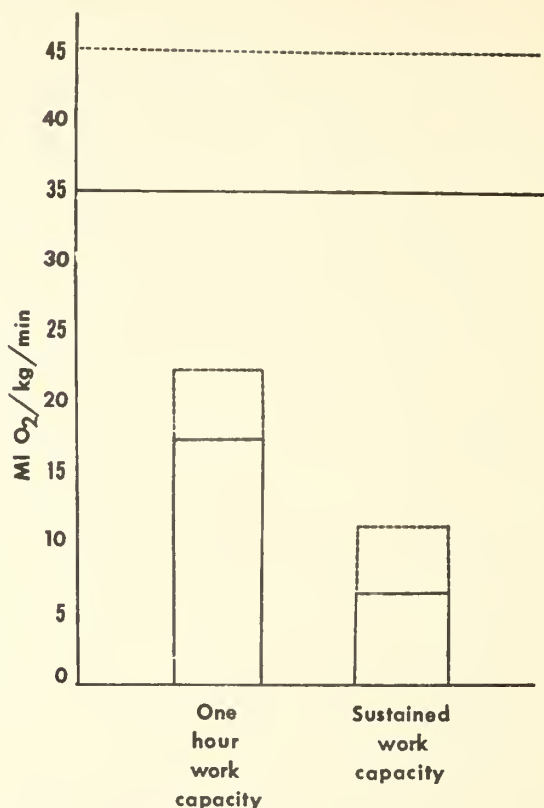


Fig. 2. Predicted one hour and sustained work capacities in relation to maximum work capacity for the average conditioned (dashed line) and poorly conditioned (solid line) adult male.

is in poor cardiovascular condition (a maximum O₂ uptake of 35 ml/kg/min). The bars at the lower part of the graph present their expected one hour and sustained work capacities. It can be readily seen that these are determined largely in relation to the maximum work capacity, the one hour capacity being roughly 50% of the maximum in each case and the sustained capacity being 25% and 20% of the maximum for the average and poorly conditioned individuals respectively.

These inter-relationships indicate that both the average and poorly conditioned individuals would have difficulty handling activities falling in the optimal classification and above (Figure 1) for one hour periods in a recreational setting. The poorly conditioned person would even have difficulty with some of the activities in the moderate classification.

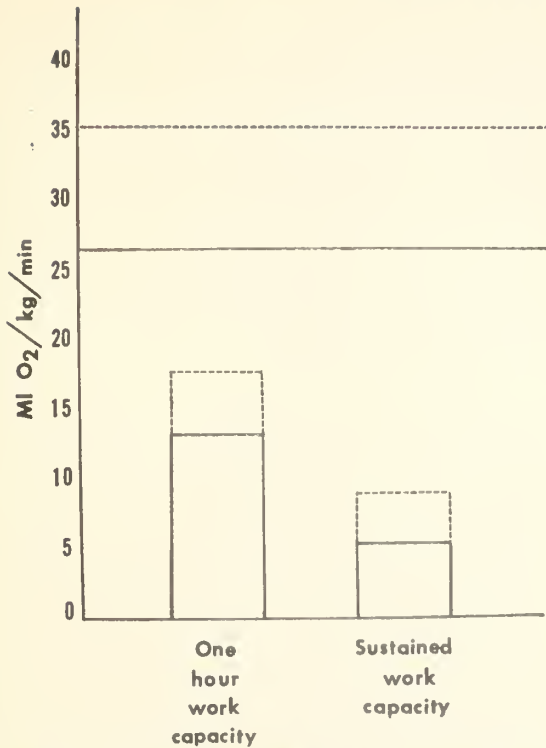


Fig. 3. Predicted one hour and sustained work capacities in relation to maximum work capacity for the average conditioned (dashed line) and poorly conditioned (solid line) adult female.

A look at the predicted sustained work capacities shows that the poorly conditioned person would be unable to handle many industrial and military tasks except in the lower ranges (Figure 1). In addition, the average conditioned individual would have difficulty with many of the tasks falling within these classifications.

Figure 3 presents the same type of picture for the young adult female. The

major difference we note here is that her maximal working capacity is lower than the male's. The average is about 35 ml O₂ intake/kg/min,¹⁰ whereas the poorly conditioned woman would have a maximum of only about 26-27 ml/kg/min. As a result both the one hour and the sustained work capacities would be lower than for the male of the same age and relative classification of fitness. The average female's sustained work capacity would make it difficult for her to carry out activity requiring energy expenditure much above the mild level of Figure 1.

Although the above relationships were determined on "normal" men and women, and this type research is at yet meager on cardiac patients, there appears to be no reason why the concept of 1/4 to 1/3 of maximum would be less satisfactory for them than for "normals" of varying age and body build.¹¹

In closing I want to emphasize that simply assessing the energy expenditure of physical activities and grouping them into categories in terms of their oxygen or kcal requirements is not enough. In order to assess their relative effect on an individual's oxygen transport system, we must consider their energy requirements in relation to each individual's maximum ability to supply oxygen for energy production. *What is mild activity for one man or woman may be quite strenuous for another.*

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Exercise and Stress Testing

THE MASTER TWO-STEP TEST. SOME HISTORICAL HIGHLIGHTS AND CURRENT CONCEPTS

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From early in 1925 to 1929, while at Cornell University Medical College, Enid Oppenheimer, an English physiologist, and I began to experiment with the "Two Step Exercise Test." For four years we utilized steps of many different types; we varied the height, the duration of exercise, and the number of trips walked. Finally, in 1929,¹ based on our results, we evolved the two steps, up and down, each 9 inches high, with a common connecting platform. Walking up one side and down the other in the same direction was considered one trip, reversing direction and returning, another, and so on. We studied the blood pressure and pulse responses to this exercise in many normal men and women and found that these parameters varied with the age, sex and weight of the subject. Since it was a 9 inch step, our mathematician deduced that the height of the patient was no factor. Our results were published in 1929 along with the mathematical and statistical background. Since that time, we have enlarged our studies considerably and have written scores of papers on our findings.

A brief history of exercise electrocardiography follows.

In 1908, Einthoven² published one lead of an electrocardiogram obtained in a patient after the latter had climbed a flight of stairs. There was no discussion.

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In 1931, Drs. Francis Wood, Charles Wolferth and Mary Livesey³ of Philadelphia obtained electrocardiograms on a patient after he had performed moderate exercise until chest pain appeared. It was not the two-step test. These workers believed that it was dangerous to have a patient exercise until pain appeared, and therefore advised that this test be used only in doubtful clinical cases. Nevertheless, these investigators should be given credit for first proposing that an electrocardiogram obtained after exertion be employed as a cardiac function test.

Scherf and his colleagues,⁴ beginning in 1933, reported on their studies with the post-exercise electrocardiogram. However, they did not standardize the exertion undertaken by their patients. In fact, they were strongly against standardization of exercise and favored repetition of the effort that ordinarily induced the chest pain. We, on the other hand, strongly believed that the exercise should be standardized. We have often pointed out that some patients experience pain only on walking, others only on climbing against the wind; a painter might feel pain only when painting a ceiling, a golfer might feel pain only at the first hole, another person might experience pain only on sexual intercourse and in many others pain may develop spontaneously, never on effort, with excitement, after meals, etc.⁵ Hence, we could not follow the arguments of Dr. Scherf. We will develop the theme

of standardization as we proceed. We published graphs showing the responses of the blood pressure and pulse rate to the two-step exercise.⁶ Cardiac efficiency was at a maximum of 3700 foot pounds per minute for men between the ages of 24 and 31 years and at a maximum of 3100 foot pounds per minute for women between the ages of 23 and 30 years. Beyond these years, cardiac efficiency declined. In addition to age, weight was important. For men, the optimum weight was 150 to 170 pounds and for women 130 to 135 pounds. Beyond this weight, cardiac efficiency decreased, just as it did beyond the optimum age.

Katz and Landt⁷ in 1935 used the electrocardiogram to record the changes that took place after dumb-bell exercise. In their studies also, the work performed by the patients was not standardized.

Missal,⁸ in 1938, wrote that the Master "Two-Step" was a convenient form of exercise for electrocardiographic interpretation but he did not have his patients perform the exercise in accordance with our tables. He had his patients walk until they experienced chest discomfort. Here, again, the procedure was unstandardized and dangerous.

Riseman, Waller and Brown⁹ in 1940 used the Master "Two-Step" Test but they had their patients walk until symptoms appeared.

In the late 1930's, we began to use only the electrocardiographic response to the 2-step test in our studies as we found this a more reliable and stable means of interpreting the results than the blood pressure and pulse rate responses. The latter were too labile. For years we experimented with the times at which to take the post-exercise tracings and so our first paper on the electrocardiogram following the 2-step test did not appear until 1941.¹⁰

In the early stages of the 2-step exercise electrocardiographic test, we consid-

ered any depression in the RS-T segment, regardless of the configuration, a significant result, and whether it was an abnormal or functional change was interpreted in the light of all the clinical findings. It was Paul Wood,¹¹ however, who, in 1950, first separated the changes in the RS-T segments after the 2-step test into "ischemic" and "J" types. Other investigators quickly followed his lead.

Beginning in 1951, Robb¹² and then in 1954, Mattingly, Robb, and their associates,¹³ published their observations on a large number of patients using the electrocardiographic response to the 2-step test as we performed it, but employing Wood's nomenclature of "ischemic" RS-T segment depressions as an abnormal test. Subsequently, this interpretation was accepted universally, in Britain,¹⁴ in India,¹⁵ in Canada,¹⁶ and in the U.S.A.¹⁷ The details of this have been related elsewhere. We, too, for many years now, have used Wood's terminology, but it was Robb and Mattingly¹⁸ who gave statistical proof of the importance between the "ischemic" depression in the RS-T segment depression and no change at all, i.e., a "negative" test or no depression at all. In fact, the only controversy that still exists concerns the interpretation of the "J" type depression. This is a descent of the "J" or junction point at the end of the QRS group from which point the RS-T segment makes unhesitating rise to the baseline, whereas an "ischemic" RS-T segment drop is horizontal before it ascends or it is an actual sag.

Many authors contend that only an "ischemic" RS-T segment response is abnormal and that all so-called "J" depressions are normal findings. We have reported that the "J" type in which the QX/QT and the QTr parameters are beyond 50 per cent and 1.07 ratio, respectively, are abnormal.^{19, 20} However, we have given up the use of these two parameters i.e., the QX/QT and the QTr for evalua-

tion of the "J", not because we have found them incorrect, but because doctors just will not take the time to measure the end of the T-wave. On occasion it is difficult to do this, but if it was done often enough, it would soon become a relatively easy procedure. All it requires is practice since all leads must be searched in order to make sure where the T-wave ends. Nevertheless, we have succumbed to "popular demand", so to speak. Our interpretation of the abnormal "J" type depression is that it be near "ischemic" merely by visual inspection.^{19,21-23}

Another point we would like to mention, now that we have discussed the RS-T segment response to the 2-step test, is the "monitored" 2-step test versus the regular post-exercise electrocardiogram.^{19, 24} The latter has been in use now for 30 years. Some physicians utilize the "monitored" exercise test because they believe it is safer than the regular post-exercise 2-step tracing. In other words, the moment an "ischemic" RS-T segment is seen, the exercise is stopped. In our opinion, these authors have set up a "paper tiger" in order to demolish it and make their point. We have found the regular post-exercise 2-step test *completely safe*. In thousands of such tests performed by us directly or under our supervision, we have never had an accident. In the few isolated cases appearing in the literature in which a myocardial infarction was supposed to have occurred after the exercise, closer study has disclosed that the exertion was either not the 2-step test or that the test was performed while the patient was in the throes of an acute myocardial infarction.

We have monitored nearly 2000 of the 2-step tests, too, for research purposes and have seen the post-exercise test disclose more changes than the monitored. Again and again the latter is negative but the post-exercise test is positive and never vice versa. However, we have found that both the monitored and the post-exercise

electrocardiograms together are important in the search for cardiac arrhythmias.²⁵ Disturbances of rhythm may be the cause of the patient's symptoms. Occasionally, these are found solely in the "monitored" test alone or in the regular "post" alone and hence the two together are more valuable for discovering irregularities of the heart beat.

Incidentally, for monitoring the test, we employ a trained technician, rarely a registered nurse. In any event, a doctor is always present in an adjoining room, and if there is any possibility that the patient may be ill, the physician himself will perform the Two-Step Test.

Monitoring the Two-Step Test has become easier because of the type of disposable electrode we use. Also of importance are the Mason leads, namely, the outer ends of the two clavicles which take the place of the two arms, and the leg electrode is placed between the lower left ribs and the left iliac crest.

The need for *standardization* of the test can be seen in the case of a struggling artist, a painter who had a very nervous disposition. His history was very suggestive of angina pectoris but his wife, his mother-in-law, and his psychiatrist kept telling me that his troubles were all mental. The single two-step test was negative, but the double two-step test disclosed ischemic depressions of the RS-T segment in leads V4 and V5, two minutes after exercise. There were also "ischemic" "J" type depressions in the "immediate" tracing of lead V5. Less than a year later the patient experienced severe pain in the chest region while driving his automobile; he turned his car toward the curb and died. Post-mortem examination by the medical examiner revealed a fresh transmural myocardial infarction.

Note that the single (or 1 1/2 minute) two-step was negative, and only the regular double (or 3 minute) two-step was positive. The exercise electrocardiogram will often be negative even in patients

who have an anginal syndrome and severe coronary artery disease, if they are not subjected to sufficient stress. Again, standardization of the test is essential; that is, the tabulated number of trips prescribed, depending on the patient's sex, age and weight, must be performed before disease can be excluded. The single test may not subject the patient to sufficient stress.

The following case also shows the need for *standardization*. This man had an anginal syndrome and was given iproniazid (Marsilid), a monoamine oxidase inhibitor. His chest pain disappeared completely. He felt "simply wonderful" since iproniazid is a psychic energizer. At that, he was only on a 10 mg daily dose of the drug. Despite his sense of well being, the electrocardiogram disclosed "ischemic" depressions in the RS-T segment. Incidentally, there was an inverted U-wave in leads V3 and V4 (two-minute post tracing); this is also an abnormal response to the Two-Step Test. Hence, even though the patient had no complaints, the severe coronary artery disease was still present; he developed a transmural infarction a few years later.

The deceased Dr. Paul Wood of London had the same experiences in England with this drug, and we exchanged exercise electrocardiograms. By using a standardized test one can perform physiological and pharmaceutical experiments and comparisons can be made around the world.

We insist that an "ischemic" RS-T segment depression of 1/2 mm or more be considered the criterion of an abnormal test. At times it may be difficult to discern a 1/2 mm depression, but if one picks out, as he must, at least 3 beats on a horizontal level and uses, of course, the P-Q or P-R as the baseline, a moment or two of study will give him the answer. An illustration of the value of a 1/2 mm depression is the patient who had an anginal syndrome. His family doctor

did not think it was a genuine case of coronary disease; there was no relief following the administration of nitroglycerin and each episode of chest pain lasted an hour. In our opinion an anginal syndrome was present. The regular post-exercise electrocardiogram disclosed a 1/2 mm "ischemic" RS-T segment "sag" depression. A few months later, the patient suffered very severe chest pain for which he was hospitalized. A monophasic dramatic injury current elevation of the RS-T segment was observed, documenting diaphragmatic wall infarction. The patient died a few hours later.

Arrhythmias may be indicative of a positive 2-step test. In one patient the monitored tracing disclosed three consecutive VPC's in the 25th trip. (The first beat in the series is a fusion beat.) The post-exercise ECG disclosed bigeminy. "Ischemic" RS-T segment depressions were also present, confirming the significance of the arrhythmia.

The 2-step will elicit evidence of organic disease in the patient who has no complaint, that is, in completely asymptomatic or *silent coronary disease*.

A patient with silent coronary artery disease first presented himself in 1956; at the time he had a classical anginal syndrome. A year later, his pain disappeared completely and despite the mental, emotional, and physical stress to which he was subjected, it did not recur. However even though his resting ECG was always negative, his two-step test remained positive during all those years. That he had organic heart disease was confirmed by an enlarged heart as seen on roentgenograms. In 1967, eleven years later, the classic anginal syndrome recurred. We have been talking about the significance of positive two-step tests, i.e. abnormal exercise electrocardiograms. However, a negative test is also of significance. A case in point is this 46 year old patient who had been a "cardiac

cripple" for 26 years. He had suffered two attacks of "acute coronary occlusion"; each time, he had been put to bed for six weeks. He had received injections of morphine to relieve his chest pain. When he presented himself to us his control electrocardiogram was negative. However, because of his past history, we allowed him to perform only the single two-step test at first. It was negative. On the following day we had him perform the regular double two-step test. It, too, was negative. By this time our opinion that he never did have coronary disease was confirmed. The next patient shows a hiatus hernia; the bolus of barium could be seen in the figure above the diaphragm. This patient was assured that he did not have heart disease; he returned to work and has been well ever since.

Discussion

Before I conclude, I must say a word or two about "coronary care units" and "heart transplantation." I do this to show that an energetic attack on the factors that constitute the coronary "profile" will help in the prevention of coronary heart disease. The 2-step test should be used to discover these people so that they may be treated long before their condition becomes serious enough to require coronary care units or a heart transplantation.

Thus far, coronary care units have been instrumental in saving lives of those with arrhythmias, provided they have been seen in time. However, recovery from shock is practically nil. Similarly is the outlook for the patient who has no heart muscle left, that is, so-called "power-failure." More important than "shock" and "power-fail-

ure," however, is the fact that from 50 to 60 per cent of the patients die suddenly from acute myocardial infarction before they ever reach a hospital! These are a medical examiner's instances of "sudden deaths." The patient is either found dead in bed or dies suddenly in the street or at work. Think of it, from 50 to 60 per cent of the patients with acute myocardial infarction never reach the hospital or the coronary care unit!

Heart transplantation, too, is still on trial. Donors are not obtainable and the survival rate in the recipients thus far has been poor. Why wait until the disease is so advanced that the heart is irreparable, the lungs, liver and kidneys permanently damaged?

Conclusion

It is obvious that we should make every effort to discover coronary heart disease early and attack it while treatment may be helpful. Drug therapy for hypertension, diabetes, hypercholesterolemia and triglyceridemia has been successful. If necessary, the patient must eschew tobacco. If he has premature beats or if he is subject to bouts of tachycardia, he must forego drinks containing caffeine or alcohol. To discover this incipient, latent or silent coronary disease, every person 35 years of age and over, should have a physical examination, annually, including a 6 foot chest x-ray film and a resting electrocardiogram. If the control resting electrocardiogram is negative, a Master 2-step exercise test or an equivalent test of cardiac function should be performed to discover underlying coronary heart disease, which, incidentally, is often silent.

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SUBMAXIMAL EXERCISE TESTING

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Although the type of testing about to be described is most commonly called "submaximal", this is not necessarily the best choice of designation. "Near-maximal" is an appropriately descriptive term which has been used frequently, and "high performance testing" is a similarly appropriate synonym. In general we refer to stress testing which involves significantly greater than 50% of an individual's maximum exercise capacity. It is distinguished, on the one hand, from mild bicycle ergometer tests involving output power on the order of 100 watts or less (600 Kg-m/min.) and the popular two-step test which in the average man involves a power output of 80 watts (480 Kg-m/min.).¹ It is distinguished on the other hand from the maximal work capacity test in which the performance of the individual is explored up to and including maximum tolerated stress.^{2,3} The near maximal tests with which the authors are familiar require work outputs ranging from 70 to 90% estimated maximal capacity. In the fields of physical education and sports medicine submaximal tests are employed to estimate functional capacity and degree of physical training.

Submaximal testing has been used in physiological research, and more recently is coming to be adopted in clinical medicine as a diagnostic tool. Physicians have found such testing useful for estimating functional capacity in patients with var-

ious cardiovascular lesions. These estimations have assisted in determining whether to continue a diagnostic investigation with cardiac catheterization in some cases, and in others it helps to determine whether to recommend corrective cardiovascular surgery or to postpone treatment. The most common use of submaximal testing in clinical medicine however has been in the diagnosis of ischemic heart disease. In this context, reasons for testing would include the need for aid in diagnosing the patient with chest pain, aid in selection of a therapeutic regimen, evaluation of the efficacy of a therapeutic regimen, and screening of individuals who although asymptomatic, have an increased risk of ischemic heart disease.⁴ Submaximal testing is also employed in epidemiologic surveys which are designed to measure the prevalence of ischemic heart disease in population groups and subgroups.⁵

There are several characteristics which submaximal exercise tests have in common. Typically they involve the use of a machine for producing the exercise stress rather than a step box, bench, hall or stairway. (The Harvard step test and its modifications are notable exceptions to this generality.⁶) The machinery involved, whether it be treadmill, bicycle ergometer or other device, has the capability of regulating the work output of the individual, and is capable of accommodating external power outputs ranging from near zero to over 400 watts (2,400 Kg-m/min.) while the individual being tested remains in place and conveniently accessible for observation and monitoring. (Table 1) Continuous electrocardiographic monitoring is employed in virtually all medical applica-

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SUBMAXIMAL EXERCISE TESTING

Table 1
Rate Of Climb And External Work Rate
On Treadmill
Treadmill Speed, M.P.H.

Slope (Percent Grade)	1.0	2.0	3.0	4.0	5.0	6.0	
10%	2.7	5.4	8.1	11	13	16	m/min.
	190	380	570	750	940	1100	Kg-m/min.
15%	4.0	8.0	12	16	20	24	m/min.
	280	560	850	1100	1400	1700	Kg-m/min.
20%	5.4	11	16	21	27	32	m/min.
	380	750	1100	1500	1900	2300	Kg-m/min.
25%	6.7	13	20	27	33	40	m/min.
	470	940	1400	1900	2300	2800	Kg-m/min.

Work rate calculation based on 70 Kg subject. Rate of climb (top number) equals net vertical component of walking in meters per minute. Work rate (bottom number) is given in kilogram-meters per minute.

tions of submaximal testing. This may consist of a single bipolar chest lead which is transmitted by radio or flexible cable to display and recording apparatus, or in other cases may include display and recording of multiple simultaneous ECG leads, usually for research purposes. (Figure 1)

In most types of submaximal testing the exercise stress is increased progressively until one of several specified endpoints is reached. This has been found necessary because of the extremely wide range of exercise capacity which is found in normal and diseased patients. No fixed level of exercise, which would be satisfactory for the most restricted patient, would ever be sufficient for testing an athletic normal individual. By beginning at a very low level and progressively increasing the severity of exercise, the entire spectrum of exercise capacity may be measured.

In submaximal testing an index of physiological response to exercise helps to determine the endpoint. Many tests for example have a target heart rate toward which the test subject works, and after which the exercise is terminated.⁷ This physiological endpoint is distinct from the pathological endpoints which are observed in all clinically appropriate tests, whether or not of the submaximal variety. These endpoints include the development of ar-

rhythmias, chest pain, neuromuscular incoordination or circulatory insufficiency.

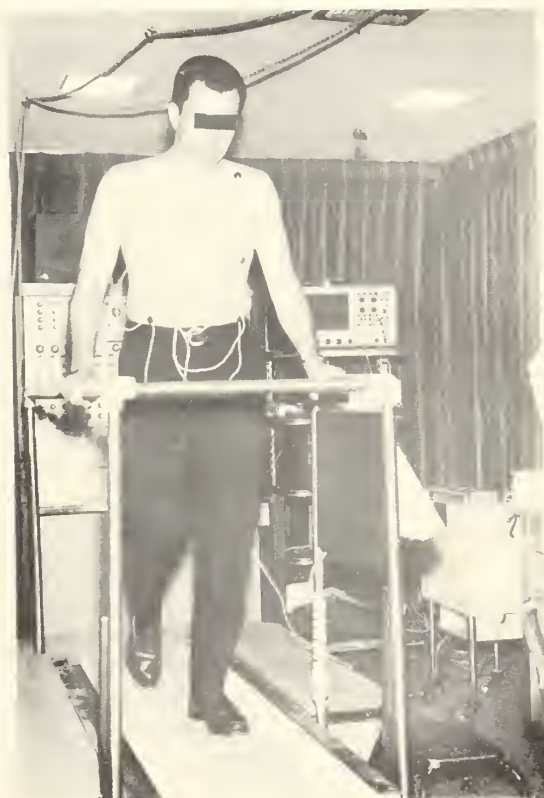


Fig. 1

The pictured subject is engaging in a submaximal treadmill test. Electrodes suitable for ECG registration during strenuous exercise are shown attached at the precordium, the shoulders and hips. A large-screen monitor scope is visible in the background. Heart rate meter and resuscitation equipment are not shown.

Finally, as mentioned above, these tests have in common a degree of exercise stress which is distinctly greater than other types of exercise testing with the exception of the maximum exercise test.

The bicycle ergometer is widely used for submaximal testing. In addition to its convenience, relatively low cost and modest space requirement, it is the only common form of exercise which can be employed conveniently during cardiac catheterization. Astrand has employed a test load of 900 Kg-m/min. for women and 1,200 Kg-m/min. for men with exercise lasting five to six minutes.⁸ These levels are suitable for normal individuals but not for persons with significant exercise limitation. Frick has used a submaximal test beginning at 150 Kg-m/min. and increasing gradually and progressively until a heart rate of 170 beats per minute has developed.⁹ By beginning at a very low level, persons with subnormal exercise capacity can be accommodated. Strandell has described an exercise method in which work is begun at 150 Kg-m/min. and continued for six minutes or more and then increased with 150 Kg-m/min. increments at the end of each interval.⁷ Exercise continues until a heart rate of 150 beats per minute is achieved or until the subject complains of excessive fatigue.

Representative submaximal treadmill tests include that reported by Taylor and colleagues, with four progressive grades of work commencing at 3 mph, zero slope, followed by a speed of 3.5 mph at slopes of 5, 7.5 and 10% successively.¹⁰ Simonson has used a fixed speed of 3 mph with progressive increases in grade from zero to 5% and then to 10%.¹¹ The test developed by Sheffield and Reeves involves starting at 1.7 mph and zero grade, and increasing speed and grade gradually as tolerated by the subject over a two to three minute period to induce a heart rate which is 90% of the predicted maximum heart rate for the individual.¹² This rate

is maintained for two to three minutes, and the exercise is terminated.

Principles of test design

It has been shown that in a given individual the heart rate response to exercise stress varies in proportion to the severity of the work load.¹³ Investigators whose submaximal tests require an arbitrary degree of tachycardia from each subject, such as 170 beats per minute, have chosen this target heart rate with the valid assumption that this should represent a significantly high work load for all individuals. Persons who are in good physical condition will perform a given level of work at a lower heart rate than persons whose physical fitness is inferior. By using the heart rate as a guide to test endpoint, automatic allowance is made for variation in physical training and condition; the athlete will perform more work in order to achieve the target heart rate, and the sedentary individual will perform proportionately less. In our graded exercise test (GXT) we have adopted heart rate not as a gauge to total body work, but in an effort to apply a standardized stress to the coronary circulation. Maximum exercise heart rate corresponds with maximal myocardial oxygen consumption in a normal individual. One who can sustain maximal myocardial oxygen demand without demonstrating electrocardiographic or symptomatic evidence of myocardial hypoxia must by inference have coronary circulation which is normal or very nearly so. If for reasons of patient acceptance and practicality, and perhaps for anxiety about patient safety, we limit the exercise severity to levels just short of maximal, the same inference regarding normality of the coronary vessels may be drawn, although with a reduced degree of certainty. Myocardial oxygen requirement and therefore, coronary blood flow requirement, is determined by the product of oxygen cost per beat multiplied by

SUBMAXIMAL EXERCISE TESTING

heart rate per minute. Oxygen cost per beat is in turn related to the size of the left ventricle, the pressure which the ventricle develops during contraction and the rate of pressure development.¹⁴ The net effect of exercise upon these functions is to cause a moderate increase in the oxygen cost per beat; however the heart rate in exercise undergoes a very large change with increases over 100% being common. It is plain therefore that the heart rate is the single most significant index of increasing myocardial oxygen requirement during exercise. Evidence that an individual can support without abnormality a heart rate which is 90% of his predicted maximal is an indication that the coronary arterial system is capable of delivering normal or nearly normal maximal blood flow.

The problem then arises of determining prior to testing an individual, what

his maximum exercise heart rate is likely to be. It has long been known that maximum exercise heart rate declined with advancing age. Robinson in 1937 tested men of widely varying ages and expressed the maximum exercise heart rate as a function of age.¹⁵ Because adequate confirmation of this age-rate relationship was lacking, Lester, et al performed maximum exercise tests on 190 healthy men between the ages of 15 and 75 years to reassess the effect of age and to determine whether other readily identifiable factors such as height, weight, resting heart rate or degree of physical training might also aid in predicting maximum heart rate.¹⁶ Our maximum heart rate data were essentially similar to Robinson's, although our volunteers developed slightly higher rates, especially in the older age groups. This may be due to the more gradual rate of work increase which we employed in testing, a

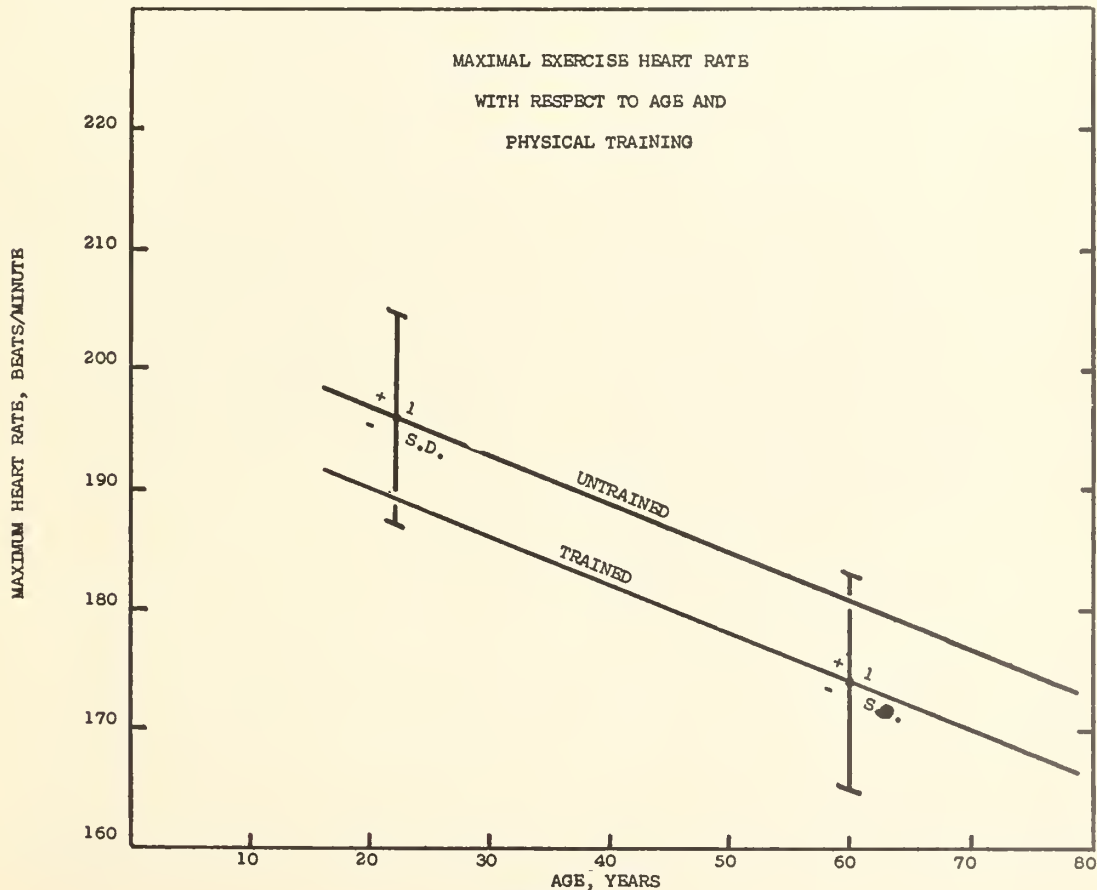


Figure 2

better state of health and motivation prevailing in our subjects, or to recent technical improvements in registering exercise heart rate. Aside from age, the only other significant factor which we showed to participate in the determination of maximum exercise heart rate was the state of physical training. Those men who engaged in physical exercise three times per week or oftener were found to have maximum rates which were on the average 7 beats per minute slower than men who did not. This difference applied equally over the entire age range studied. (Figure 2) Thus the maximum predicted heart rate for trained men is $198 - (0.41 \times \text{age in years})$. For untrained men the value is $205 - (0.41 \times \text{age})$. This prediction is of course approximate; in our study one standard deviation of observations was ± 8.7 beats per minute.

With a means at hand for predicting the approximate maximal exercise heart rate of an individual, we experimented with various percentages of this maximal heart rate in order to find the highest percentage of maximum which could be tolerated well by the average individual without producing untoward effects.

Heart rates of 70, 80, 85 and 90% of predicted maximum were well tolerated and could be achieved by nearly all subjects tested. Above 90% of predicted maximum heart rate, the aftereffect of exercise stress was more prolonged. Post-exercise hypotension was produced occasionally and an appreciable fraction of sub-

jects were either unable or insufficiently motivated to exercise sufficiently to achieve heart rates higher than 90% of maximal. Since in our experience higher exercise heart rates are associated with improved sensitivity for detecting ischemia, we chose the 90% heart rate level as an optimal compromise between patient applicability and acceptance on one hand, and test sensitivity on the other. (Table 2)

Precautions

It is of primary importance to avoid exercise testing in the presence of impending, acute or healing myocardial infarction. A 12 lead ECG is recorded and interpreted, and the subject is questioned briefly with this in mind. The V_5 electrocardiogram is monitored continuously by oscilloscope and heart rate meter. Exercise is interrupted if rhythm or conduction disturbances occur or if an ischemic ST segment pattern is recognized in the ECG. The test subject is observed closely, and exercise is terminated if he develops progressive chest pain, a staggering gait, cutaneous vasoconstriction or any important sign or symptom of exercise intolerance. Although complications of submaximal exercise testing have proved to be very rare, resuscitation equipment should always be at hand. Equipment should include a DC defibrillator, airway, oxygen, analgesic, vasopressor, antiarrhythmic and inotropic drugs, and intravenous fluids.

Table 2
Maximum Heart Rate Predicted By Age And Training
& selected fractions thereof

Age	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
Max H.R.															
Untrained	197	195	193	191	189	187	184	182	180	178	176	174	172	170	168
90% MHR	177	175	173	172	170	168	166	164	162	160	158	157	155	153	151
75% MHR	148	146	144	143	142	140	138	137	135	134	132	131	129	128	126
60% MHR	118	117	115	114	113	112	110	109	108	107	106	104	103	102	101
Max H.R.															
Trained	190	188	186	184	182	180	177	175	173	171	169	167	165	163	161
90% MHR	171	169	167	166	164	162	159	158	156	154	152	150	149	147	145
75% MHR	143	141	140	138	137	135	133	131	130	128	127	125	124	122	121
60% MHR	114	113	112	110	109	108	106	105	104	103	101	100	99	98	97

SUBMAXIMAL EXERCISE TESTING

ISCHEMIC ST SEGMENT RESPONSE IN THE V₅ ELECTROCARDIOGRAM

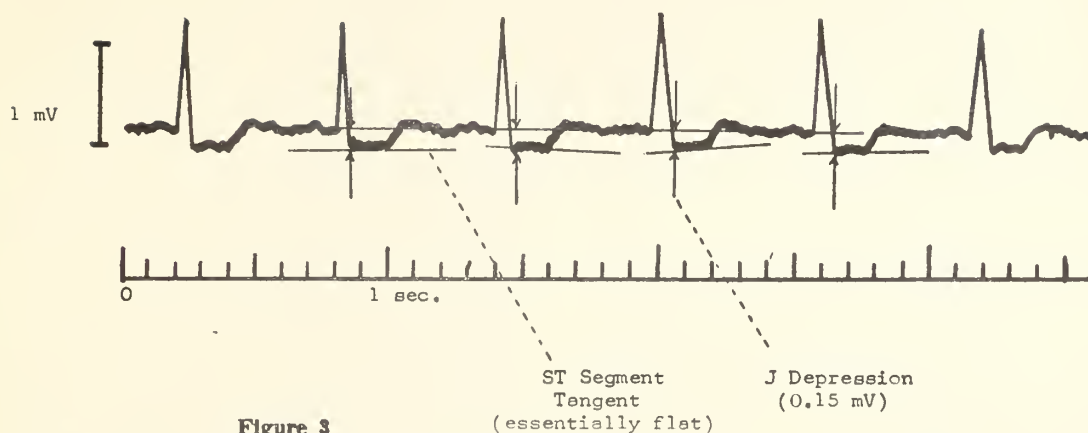


Figure 3

Interpretation of Submaximal Exercise Test Electrocardiograms

To transfer interpretation criteria which have been painstakingly developed for a low intensity exercise test directly to the GXT or other submaximal stress test is to ask needlessly for theoretical as well as practical difficulties. Submaximal tests require their own system of interpretation criteria. Moderate depression of the QRS-ST junction (J point) is regularly observed in both normal and abnormal subjects at the rapid heart rates induced by submaximal testing, and neither this isolated phenomenon nor minor T wave changes are recommended as diagnostic criteria. The conversion of a normal control tracing to one showing an "ischemic ST segment" in response is not specific for myocardial hypoxia and may be produced by left ventricular hypertrophy,¹⁷ left ventricular overload without detectable hypertrophy,¹⁷ intraventricular conduction defect,¹⁸ and digitalis glycosides.¹⁹ When these factors can be excluded however the ischemic ST segment response can be equated with myocardial hypoxia with a high degree of confidence. For GXT interpretation ischemic response is defined as ST segment depression which is initiated by J point depression of .1 mV or more, followed by an ST segment

which is flat or downsloping (slope of less than +1 mV/sec.) for a duration of .08 second or more. A corresponding degree of ST segment elevation in response to exercise is interpreted similarly. In order to minimize human variation in recognizing this ischemic response, we recommend that it be detected by careful measurement of at least three consecutive heart cycles whose QRS onsets may be fitted to a single straight line. Figure 3) This baseline is then used to measure J point depression amplitude, and it is the slope reference for evaluating ST segment slope after drawing a straight line tangent to the first .08 sec. of the ST segment for each heart cycle measured.

When we compared ST segment response to double two step exercise stress and to GXT stress in normals and in patients with typical angina pectoris, we found no "false positive" responses in the asymptomatic group. The two step exercise induced "ischemic ST depression" in 65% of the angina patients, and the GXT exercise increased this to 79%. The test was well tolerated by all subjects.¹² (Table 3)

Discussion

In the field of ischemic heart disease diagnosis, submaximal exercise testing is being employed with the expectation of in-

SUBMAXIMAL EXERCISE TESTING

Table 3
Comparison Of A Submaximal Stress (GXT)
With Double Two Step Stress

	Test Group	Number Subjects	Exercise ECG Response (see text for criteria)			
			Negative		Positive	
			Two Step Test	GXT	Two Step Test	GXT
No Prior Infarction	Normal subjects	112	112 100%	112 100%	0	0
	Angina pectoris	34	12 (35%)	7 (21%)	22 (65%)	27 (79%)
	Chest pain probably angina	14	10 (72%)	7 (50%)	4 (28%)	7 (50%)
	Chest pain probably not angina	21	20 (96%)	21 (100%)	1 (4%)	0
	No chest pain	9	8 (89%)	9 (100%)	1 (11%)	0
Healed Infarction	Angina pectoris	26	16 (62%)	12 (46%)	10 (38%)	14 (54%)

creasing exercise test sensitivity in order to make possible detection of mild and moderate degrees of coronary disease. In a recent study of 31 patients with typical angina pectoris, one half of the positive exercise ECG responses occurred at heart rates between 70% and 90% of predicted maximum.²⁰ It is likely that many of these responses would have been missed if less than 70% exercise had been employed. It is reasonable to assume that coronary disease which produces signs of myocardial ischemia only with the strenuous exercise of a submaximal test is less severe than that which produces ischemia with mild exercise and a low exercise heart rate. Therefore we do not believe that all ischemic responses to submaximal tests are equally ominous. Ischemic responses which are precipitated early in the test when the work rate is low and the heart rate also relatively low, would suggest a severe degree of coronary obstructive disease; however the finding of ischemic ST segment depression only in the last few seconds of an uninterrupted GXT which has progressed satisfactorily to target heart rate, would suggest only the minimal degree of coronary disease which may be detected by this means. In terms of insti-

tuting effective treatment, the advantage of a high degree of sensitivity in a stress test is obvious. It is likewise worthy of consideration in screening individuals in transportation and other fields where the lives of others depend on continuous skillful performance.

Submaximal exercise testing is advocated as the best generally applicable means to aid in the diagnosis and evaluation of ischemic heart disease. The authors advocate in particular the GXT version of submaximal testing because we believe that employment of a target heart rate which is a fixed fraction of predicted maximal heart rate makes the closest approach to an exercise stress which is standardized to the individual. The submaximal tests as described are not universally applicable without some judicious modification, and in certain individuals they are not appropriate under any circumstances. Some persons, whether because of poor motivation, grossly unfit physical condition or disease process will not exercise long enough or strenuously enough to make a normal ST segment response meaningful in terms of ruling out detectable ischemic heart disease. Other patients, amputees, arthritics and those

with certain central nervous system disorders, are not able to participate in a stressful degree of physical exercise, and for them a heart rate stress test can best be performed by right atrial pacing.²¹ The standard error of the maximal heart rate prediction is such that in 2 to 3% of subjects the GXT target heart rate actually represents maximal heart rate. Therefore the subject is carefully observed during exercise and if his appearance, skin temperature, perspiration rate or exercise performance suggests that he is approaching maximal exercise, the test is terminated short of the attainment of GXT target heart rate.

With these considerations in mind it

is possible to test patients safely with a degree of exercise stress which is well tolerated. The results of interpretation of the exercise electrocardiogram and of direct patient observation, particularly if chest pain was induced during exercise, contribute valuable information about the patient and aid significantly in the correct diagnosis of ischemic heart disease.

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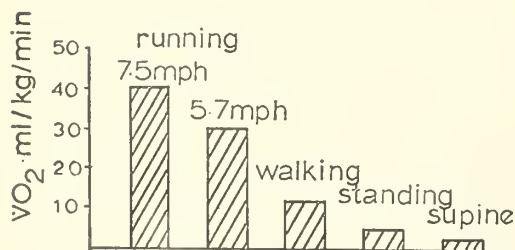
MAXIMAL EXERCISE TESTING IN ASSESSING CARDIOVASCULAR FUNCTION

JOHN R. McDONOUGH, M.D.
ROBERT A. BRUCE, M.D.*

Cardiovascular Physiology of Exercise

Muscular exercise always increases aerobic metabolism and initiates a demand for increased circulatory transport of oxygen (Figure 1). The amount of oxygen transported to the tissues, particularly to the working muscles, is proportional to cardiac output and to rate of peripheral extraction, or arteriovenous oxygen difference for the whole body. Increased cardiac output, primarily from increased heart rate, imposes a greater hemodynamic demand and metabolic stress on the myocardium, particularly the left ventricle. Demand for coronary blood flow increases, along with the further extraction of oxygen from this flow. Other circulatory responses include arterial vasodilatation in the working muscles, visceral vasoconstriction, a shift in distribution of cardiac output, and limited fall in diastolic blood pressure and peripheral resistance.¹

Aerobic cost of various activities



$$\text{VO}_2 = \text{HR} \times \text{SV} \times \text{AVO}_2$$

Figure 1

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Definitions of Exercise Stress

Fundamentally, there are two types of tests of dynamic exercise.² One is a broad group of submaximal tests; the other employs maximal effort. Either may utilize steps, bicycle ergometer, treadmill or other devices for dynamic exercise of the skeletal muscles.

Submaximal tests are characterized by one or more work loads, of varying duration, with or without intervening rest periods, but usually with prescribed and arbitrarily fixed end-points. These may vary from intensity or duration of effort, number of steps, level of oxygen intake, heart rate (such as 150, 170 or 180 per minute) or a combination of factors. All prescribe a load that is expected to be below maximal for anyone tested, regardless of individual variation due to age, sex, body mass, physical conditioning or other stressful factors that might be acting on the circulation.

Maximal tests as described by Taylor, Buskirk, and Henschel³ are characterized by a preliminary warm-up load, then much more intensive effort for 2¾ minutes. Repeated tests at higher work loads (after several hours of rest) are necessary to demonstrate objectively a failure to increase oxygen intake with the addition of a greater work load. With the continuous multistage test^{2, 4} commonly used in this laboratory, the work load is increased every 3 minutes without interruption for intervening rest periods until a self-determined end-point of exhausting fatigue dyspnea or angina is achieved (Table I). With this procedure, intensity and dura-

Table I

	Speed mph (kpm)	Grade % (degrees)	Internal Distance ft.	Cumu- lative Distance ft.
I	1.7 (2.74)	10 (5° 43')	449	449
II	2.5 (4.02)	12 (6° 51')	660	1109
III	3.4 (5.47)	14 (7° 58')	898	2007
IV	4.2 (6.76)	16 (9° 06')	1108	3116
V	5.0 (8.05)	18 (10° 12')	1320	4436
VI	5.5 (8.85)	20 (11° 19')	1452	5888
VII	6.0 (9.66)	22 (12° 25')	1584	7472
Total time, 21 minutes; total distance, 1.42 miles				

tion of effort are reproducible, and maximal oxygen intake is virtually identical with Taylor's method.⁵ Maximal effort may be defined safely and reliably, even in ambulatory cardiac patients, within 10 to 15 minutes, rather than in hours or even days of testing. Since maximal oxygen intake provides the most appropriate physiological frame of reference for evaluation of cardiovascular responses in each individual,⁶ tests of maximal effort are preferred over submaximal tests. Should submaximal intervals be desired for comparison of physiological responses, these are readily obtainable from the maximal test. The opposite, however, does not apply. Measurement of maximal endpoints cannot be made from submaximal tests, only crude extrapolations are possible.

Table II

Clinical Effectiveness of Exercise Stress Testing
(Comparison: Submaximal vs Maximal Tests)

Clinical Purpose	Submaximal Tests	Maximal Tests
I Diagnosis of ischemic heart disease		
Preclinical myocardial ischemia	good	better
Atypical chest pain	good	better
II Evaluate functional aerobic capacity		
Impairment in ambulatory cardiac patients	no	yes
Fitness in normal subjects	no	yes
III Evaluate therapy in cardiac patients		
Medical	limited	yes
Surgical	limited	yes
Physical training	limited	yes

Use of Maximal Exercise Testing

Basically, five uses for maximal exercise testing can be identified (Table II). The first is identification of preclinical or potential ischemic heart disease; next, as an aid in the diagnosis of clinical ischemic heart disease, particularly atypical chest pain syndromes suggestive of angina; third, testing is valuable in the assessment of impaired cardiovascular oxygen transport; fourth, cardiovascular fitness or oxygen transport capacity in healthy subjects can be assessed; and fifth, testing provides a method for evaluating therapy in cardiovascular disease, particularly procedures such as myocardial revascularization, cardiac valve surgery, etc. If we compare submaximal with maximal tests, it is seen that maximal tests are superior in assessment of risk for future ischemic heart disease and in diagnosis of atypical chest syndromes.

Assessment of aerobic capacity in terms of level of cardiovascular fitness or its complement, the degree of cardiovascular impairment, is readily accomplished with maximal testing, but cannot be adequately assessed with submaximal tests. Likewise, evaluation of therapy is more readily accomplished with maximal than with submaximal testing.

Recommended Testing Procedures

Of the commonly used types of stress procedure, the motor driven treadmill is preferred simply because the work loads are regulated involuntarily. This achieves a precision of energy expenditure (Figure 2) not usually obtained with either step test or bicycle ergometer by individuals who are previously untrained. Better precision is obtained when exertion is performed without support of the handrail. Oxygen cost is thus directly related to the external work load which is standardized by the ergometer, the mechanical efficiency of the body and the body weight. In our experience involving several thousand ambulatory normal subjects and cardiac

Aerobic cost
multistage treadmill test
healthy men aged 40-69
(mean \pm 1 s. e.)

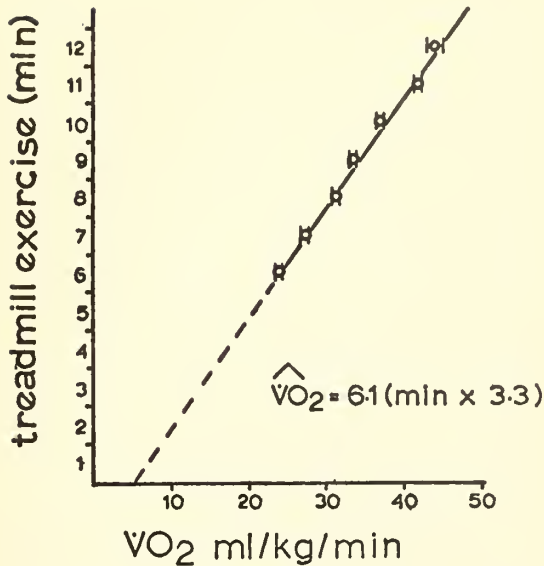


Figure 2

patients, a multistage treadmill test has been effective, expedient and remarkably reproducible.⁵

Table III

Contraindications to Exercise Testing

Absolute Contraindications

1. Serious acute disease, esp. myocardial infarction, carditis, pulm. emb.
2. Severe assoc. diseases (pts usually non-ambulatory)
 - pulm., renal, hepatic failure
 - orthopedic or nervous system impairment

Relative Contraindications*

1. Severe obstructive valvular disease (aortic stenosis, mitral stenosis, idiopathic hypertensive subaortic stenosis)
2. L or R ventricular failure
3. R-L shunt
4. Severe conduction disturbance (complete heart block, intraventricular conduction delay.)

Not Contraindications

1. Stable angina
2. Healed myocardial infarction (more than 2 months)
3. Most stable supraventricular arrhythmias
4. Most chronic valvular disease
5. L-R shunts

*In cardiology practice, the value of testing often exceeds the risk in these patients.

Safety Precautions Against Hazards
of Testing

Before performing a stress test, the physician should review the history and examine the patient, including a 12 lead resting electrocardiogram, to exclude any person with recent cardiopulmonary changes indicative of acute myocardial infarction (Table III). Testing is also contra-indicated in the presence of pulmonary edema, marked right ventricular failure, or paroxysmal ventricular tachycardia. Patients with marked valvular heart disease, especially aortic stenosis or mitral stenosis, are prone to develop exertional hypotension⁷ and may experience syncope. Treatment with digitalis glycosides augments ST segment depression, while myocardial depressants and beta adrenergic blocking compounds enhance the chances of developing left ventricular failure during strenuous exercise. The physician has the responsibility to monitor the patient and his electrocardiogram during the test. The onset of 3 or more consecutive ventricular beats, or the appearance of an ataxic gait, are presumptive evidence of acute insufficiency of coronary or cerebral circulation and are considered mandatory indications for stopping the exercise stress (Table IV). Asymptomatic ST segment depression alone has not been considered a reason for stopping the test. The subjective sensation of exhausting fatigue, particularly of the legs, is usually a highly repro-

Table IV

Indications for Termination of Exercise Test		
Indication	Rx	Prevalence
1. Hypotension, ataxia	Supine rest or level walking	1%
2. Bradycardia	Atropine, O ₂ if nec.; rarely, cardiac massage	0.5%
3. PAT	CSP, rest, pressor, propranolol, digitalis	0.5%
4. VT	O ₂ , lidocaine, elec. cardioversion	0.2%
5. VF	O ₂ , massage, defib.	0.01%

*One episode occurred after testing and appeared associated with heat stress (shower).

Table V
Advantages and Disadvantages of Exercise Stress
Testing

(Comparison Submaximal vs Maximal Tests)

	Submaximal Tests	Maximal Tests
Incidence of serious complications		
Myocardial infarction	7/102,000	2/6000
Deaths	4/102,000	0/6000
Clinical Uses	2	5
Presence of MD	?	Yes
O ₂ , defib., drugs	?Yes	Yes
Minimal instrumentation	ECG, steps	ECG, steps, TM or bike
Preceding PE and ECG	Yes	Yes
Exercise time	2-5 min.	¼-12 min.
Recovery time	5-10 min.	5-10 min.

ducible event and has been shown to correlate well with maximal oxygen intake. The patient should be allowed to rest for at least 10 minutes after exercise with continued measurement of blood pressure and ECG and physician monitoring. The testing laboratory should be equipped with cardiopulmonary resuscitation equipment including airway, oxygen, emergency drugs and a defibrillator.

Advantages and disadvantages of maximal and submaximal testing can be compared (Table V). Occurrence of acute myocardial infarction may occur with either testing method. Fortunately, the prevalence is low with both, but may be somewhat higher with maximal testing. The 2 known cases of non-fatal myocardial infarction which occurred shortly after maximal testing both occurred during a hot shower 15 to 30 minutes after the test. This suggests that the combination of upright posture and heat stress with resulting venous pooling and decreased coronary perfusion may have had a role in the pathogenesis of these acute lesions.⁸ To date, we are aware of 4 deaths associated with submaximal testing, but none that has occurred with maximal testing. This obviously reflects the far larger number of submaximal tests, such as the double Master's, which have been performed as compared to maximal tests.

Both tests require antecedent physical

exam and ECG; both require approximately the same amount of time for testing and recovery, and both require the availability of oxygen, defibrillator and drugs.⁹ Presence of a physician is required during maximal testing, but may not be a requirement for submaximal tests of normal subjects. Equipment needs are simpler for submaximal tests, a set of steps and an ECG being minimal. However, the need for a treadmill or bicycle ergometer in maximal testing is well worth the cost and space requirements because of the greater number of clinical applications for maximal testing.

Bipolar ECG Lead

For comprehensive research studies of ECG responses, vectorcardiograph systems as the Frank ECG utilizing mutually perpendicular X, Y, and Z leads are necessary for derivation of planar and spatial changes.¹⁰ For purposes of clinical testing and epidemiological surveys, a simple bipolar ECG lead system is sufficient.⁴ The "exploring" electrode (and left arm cable) should be placed in the conventional V₅ location near or just beyond the apex impulse of the heart. The "indifferent" electrode (and right arm cable) should be located at the inferior tip of the right scapula posteriorly. This combination has been designated CB₅ in this laboratory; when recorded on lead I of the electrocardiograph, the pattern is a blend of the con-

ventional bipolar limb lead I and Wilson precordial V_5 lead. A third electrode for "grounding" the patient is attached to either chest or forehead.

The direction of lead orientation determines the extent of ST segment displacement. In normal subjects, as well as in those with heart disease, the ST vector tends to move rightward, superiorly and posteriorly during exercise.¹⁰ This phenomenon explains why the left lateral chest leads are often so useful in detecting ST changes during exercise.

Qualitative Visual Interpretation of ST Responses

Criteria which vary by depth of ST segment depression; slope of the segment whether upsloping, horizontal or downsloping; the presence of J junction depression; and whether interpretation is limited to the post-exercise recovery period or also includes exercise tracings are major reasons for variations in reported prevalence of abnormal responses (Table VI).

Table VI
ST Changes Following Maximal Exercise Stress Testing

	Relative Severity of Ischemic ST Response*		
	Minimal	Moderate	Marked
J depression	1.5 mm	—	—
ST seg. depression	0.5-1 mm	1-2 mm	>2 mm
ST seg. slope	up	horiz.	down
Dur. ST depression	few seconds	few minutes	several minutes
T waves	flat	inverted	deeply inverted

*in absence of digitalis or hypokalemia

It is unfortunate that uniform and generally applied criteria for classification of ST-T responses to exercise have not been developed. The main reason for this deficiency appears to be the lack of prospective information of prognostic value for various components of the maximal or near maximal exercise electrocardiogram. Exceptions appear to be the studies of Mattingly,¹¹ Robb and Marks¹² and Brody¹³ using the double Master two step test, and Rumball and Ackerson¹⁴ using a modified, but submaximal exercise test.

For maximal tests, such as the multi-stage, with the bipolar lead described, ST segment depression at 60 milliseconds beyond the J point, whether upsloping, horizontal or downsloping of 1.0 mm or more (<-1.0 mv) after exertion is abnormal (Figure 3, Table VII).^{10, 15} In each instance, the PR segment is the reference voltage. Severity of ischemic response may be graded in magnitude of displacement and number of minutes abnormal changes persist after exercise.¹⁰

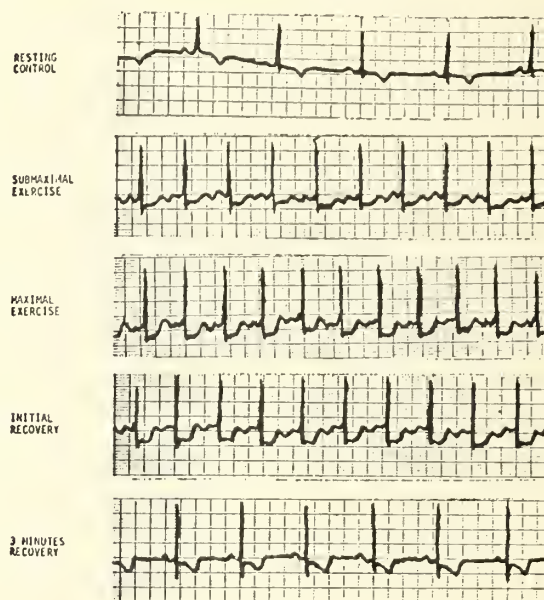


Figure 3. Precordial (CB_5) electrocardiogram recorded on a 56 year old executive with angina pectoris for 10 years and with myocardial infarction 5 years previously. Selective coronary arteriography demonstrated complete occlusion of circumflex and right coronary arteries, partial occlusion of left anterior descending artery and definite collateral circulation. Exercise was limited to only 140 seconds in stage I, with estimated maximal oxygen intake of 15 ml/kg per minute. Heart rate accelerated from 56 to 114; per minute, as systolic blood pressure increased by 25 mm Hg. Note appearance of upsloping ST segment depression at maximal exercise, and prompt evolution (in the same lead system) of horizontal segmental depression in initial recovery, and down-sloping segmental depression by the third minute after maximal exercise. In all instances, this depression exceeded 1 millimeter, or -0.1 millivolt; all 3 variations are considered positive, or abnormal responses consistent with myocardial ischemia induced by hemodynamic stress of exercise.

MAXIMAL EXERCISE TESTING

Table VII
Criteria for Classification of Abnormal ST Responses
to Multistage Treadmill Test of Maximal Exercise*
ST Segment Depression**

Exercise test stage or observation period	Upsloping			Horizontal			Downsloping		
	<0.5	0.5-0.9	>1.0	<0.5	0.5-0.9	>1.0	<0.5	0.5-0.9	>1.0
1. Submaximal exercise	—***	—	?***	—	?	?	—	?	?
2. Maximal exercise	—	—	?	—	?	?	—	?	?
3. Recovery, after exercise	—	—	+***	—	?	+	—	?	+

* Present criteria, using computer-averaged data employing 100 consecutive complexes, and averaging the ST₂ voltage in 16 address locations from 50 to 59 milliseconds following nadir of S. Clinical assessment requires 5 or more consecutive complexes, with ST segment depression occurring for 60 ms beyond the J junction. Both computer and clinical assessment utilizes the PR segment as reference baseline.

**ST segment units in millimeters of deflection, where 1 mm=0.1 mV.

***+=abnormal, —=normal, ?=borderline or uncertain categories for which prognostic significance is unknown for maximal tests. Current practice with the CB₅ lead system limits abnormal classification to —.1 mV or greater ST depression during recovery, irrespective of direction of slope. Resolution of the questionable categories must await multivariate analysis and prospective study of prognosis.

Oxygen Transport Capacity

Maximal exercise testing provides the only method for assessing circulatory capacity for oxygen transport and thus adds a valuable dimension to cardiovascular assessment both in health and disease.¹⁶ Reproducibility of maximal oxygen consumption utilizing the multistage treadmill test is remarkably close. Variation for the same individuals tested months apart averaged 0.4 ml/kg/min and the standard error of the measurement was less than 5 per cent of the average maximal oxygen intake.⁵

$\dot{V}O_{2\max}$ of healthy men
 by age group
 (mean \pm 1 s.d.)

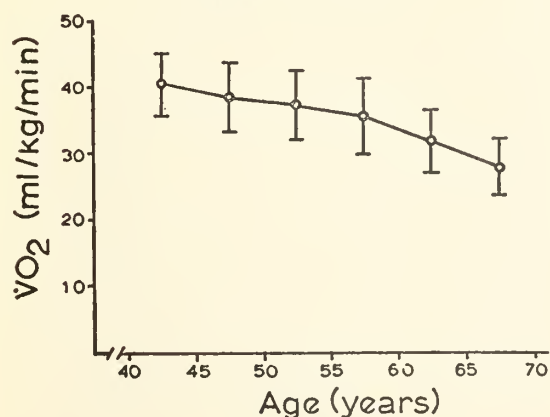


Figure 4

The test can be used to study the effect of age on oxygen transport capacity. (Figure 4). Here can be seen the gradual slight deterioration in this parameter with advancing age. As to the components of this deterioration, a portion is due to the decrease in maximal heart rate with advancing age, but this is not the only cause. Oxygen pulse, which represents the product of maximal stroke volume and maximal AVO₂ difference in the Fick equation, also falls significantly with advancing age. Whether this represents the effect of aging on stroke volume, oxygen extraction, or both, is not known.¹⁷

The test can also be beneficially employed in assessing cardiovascular fitness relative to physical training for individuals (Table VIII). Such vexing questions as whether a subject should start physical training during middle-age, and if so, how much exercise should be performed can be evaluated on the basis of performance during maximal exercise testing. It is our impression that most individuals who are able to complete stage III of the multistage test in the absence of serious arrhythmia, conduction disturbance or hypotension should eventually be capable of jogging for a total distance of one mile after preliminary warm-up exercises; and this would apply whether the subject is

MAXIMAL EXERCISE TESTING

Table VIII

Exercise Performance Levels of a Standardized Multistage Treadmill Test and Recommended Training Goals for Ambulatory Middle-aged Men

Treadmill stage completed	Maximal oxygen consumption (ml/kg/min)	Multiples above Resting=1	Percentages of men* completing stage		Recommended limits for physical training**	
			Healthy men	Cardiac patients	Type of activity	Total distance miles
I	16-18	5	100	80	Walking	1
II	23-25	6-7	95	40	+ Jogging	1/2
III	28-34	8-10	60	15	+ Jogging	2
IV	35-42	10-12	5	1	+ Jogging	2

* Exercise capacity for women, healthy as well as cardiac, averages about 25 per cent less than for men.

** Activity should be performed a minimum of three times per week in order to secure and maintain the desirable degree of fitness training. The goal of training is eventually, over a period of weeks or months, to continue activity without interruption until the recommended total distance is obtained. If significant symptoms occur during activity, subject should slow down or rest briefly, then resume activity until prescribed distance is attained.

normal or has cardiac disease.¹⁶ This does not say that such an individual can jog a mile before training, or that the jogging can be continued, without interruption for intermittent periods of walking, for a distance of one mile. Furthermore, if performed in a hot, humid environment, the amount of exercise, especially jogging, should be appreciably reduced.

The test is a sensitive indicator of aero-

VO_{2max} of healthy men
by physical activity
(mean \pm 1 s. e.)

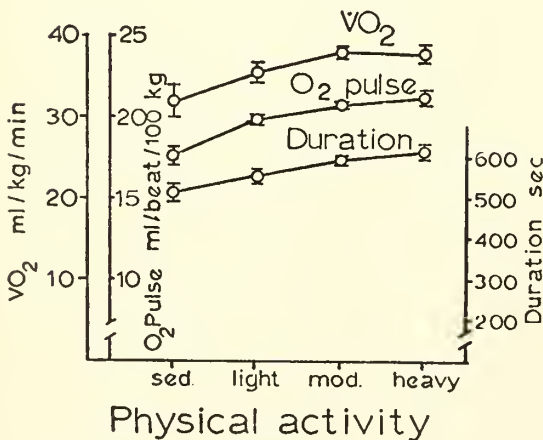


Figure 5

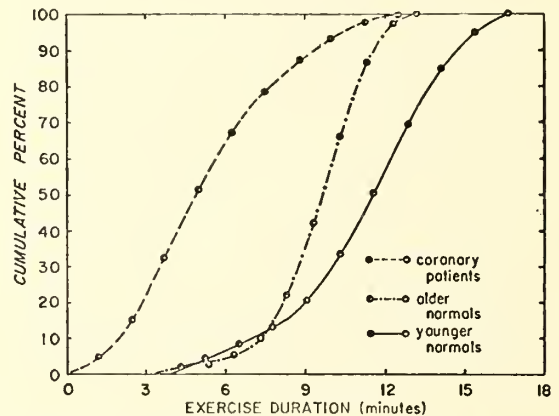


Figure 6. Cumulative distribution curves of duration of maximal exercise with multistage treadmill test in two groups of normal men and patients with ischemic heart disease.

bic capacity in relationship to physical fitness (Figure 5) in groups of persons as well as in individuals. Repeated dynamic exercise, or physical training, of sufficient intensity to increase metabolism to 75 to 90 per cent of maximal will raise aerobic capacity 10 to 30 per cent in most sedentary individuals, and this difference is readily ascertained on the multistage treadmill test as a longer time duration of treadmill exercise and higher maximal oxygen consumption.¹⁷

Evaluation of aerobic capacity is also

a valuable addition to the assessment of functional capacity in cardiac patients (Figure 6). Impairment imposed by cardiac disease is reflected in a shorter exercise duration and a lower maximal oxygen consumption. The basic pathophysiological mechanism for the disability is due to decreased maximal forward cardiac output produced by any of several abnormalities, including restricted ventricular filling, outflow obstruction, regurgitant flow, or a weakened myocardial contraction.¹⁸ Impairment can be quantitatively and precisely measured by maximal exercise testing. The method thus provides a potentially valuable method for use by clinicians in the initial assessment of cardiac disease, the natural history of cardiac disease in patients, and the effectiveness of either medical or surgical therapy.

Summary

In summary, maximal exercise stress

testing has been reviewed in terms of clinical uses, contraindications, hazards, advantages, and methods. If certain precautions are taken, and clinical judgment utilized, maximal exercise testing is a quite safe procedure for normal subjects and most cardiac patients. The presence of coronary, valvular and other forms of heart disease do not *per se* preclude the use of such testing; contrariwise, the test can provide most valuable information in the diagnosis and management of such patients. Additional applications of the method include evaluation of medical and surgical therapy in cardiac disease, pre-clinical myocardial ischemia, and assessment of cardiovascular fitness in the context of physical exercise reconditioning programs. Maximal exercise stress testing thus can provide a valuable addition to the practice of clinical cardiology and to the methodology of cardiovascular epidemiology.

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Exercise Programs for the Prevention of Heart Disease

EXERCISE PROGRAMS: TYPES, DIRECTIONS AND DANGERS

WARREN K. GIESE, Ph.D.*

During 1962, the Parke-Davis Company of Detroit, Michigan tabulated the results of 3,753 questionnaires returned to them by American physicians. In what must be considered a rare showing of unanimity, 96% of the physicians agreed that positive health benefits attend regular moderate exercise.¹ In response to a second question concerning what physicians recommend for patients whom they consider to be in good health, but not physically fit, the following recommendations were tabulated and indicated something less than commitment to prescribing a planned involvement in exercise programs.

- | | |
|---|-----|
| 1. Daily walking | 72% |
| 2. Regular participation in sports, such as golf, or swimming (please note both are seasonal and require very special facilities) | 64% |
| 3. Setting up exercises | 38% |
| 4. Regularly scheduled exercises of a general nature according to the individual's ability | 72% |
| 5. Gardening, light physical work, hobbies | 5% |
| 6. Gymnastics, calisthenics | 3% |
| 7. Cycling | 2% |

The term physical fitness in the minds of most lay people is a somewhat nebulous term which is interpreted in many ways. It wasn't too long ago that the "Charles

Atlas" build supposedly indicated a superbly fit individual. This belief was bolstered by our fitness testing which involved primarily muscle strength tested by the old reliable pull-ups, sit-ups, push-ups, and the ever present dynamometers.

The more recent concept of physical fitness focuses our attention on the cardiovascular system. Kinetic exercises such as jogging, swimming, cycling and walking are now some of the ingredients of exercise programs which are based on an ever increasing volume of studies in exercise laboratories. These studies have opened to serious questions the all too present concept among many physicians and lay people that any kind of exercise is all right regardless of its frequency, intensity or duration. From a physiological point of view, exercise programs may consist of almost any physical activity which causes biochemical processes to place increased demands upon various systems of the body. The stress created by these demands upon various body systems then becomes a function of the intensity, duration and frequency of the exercise efforts. We trust this conference will shed additional light on these three critical elements of exercise programs.

Types

There are a relatively large number of exercise programs in existence today which have developed with improvement of cardio-vascular function as one of the basic objectives. Perhaps the program in most widespread use at this time is the one developed by Lieutenant Colonel Ken-

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neth H. Cooper of the Aero-Space Medical Laboratory. His quantification of physical activity into a simple point system has motivated many people to schedule and obligate time for exercise as a part of their daily routine of living.

Another exercise program in widespread use at this time is the one developed by Dr. Tom Cureton, from the University of Illinois. His program is based upon continuous rhythmical movement over a prolonged period of time.

Physician-physical educator teams, such as Harris and Bowerman, Boyer and Kasch, Hellerstein and Maistelman, Balke and his staff, to mention a few, have developed exercise programs in widely separated areas of the country, but which are remarkably similar in content. Jogging, defined as alternating periods of fast walking and varying speeds of slow and moderate running, apparently forms the basis of these programs.

A new variation of the old "daily-dozen" is called the Canadian 5BX (Basic Exercises) program which takes approximately 11 minutes. It is a popular program which can be completed in one's bedroom, bathroom, or hotel room and contains varying amounts of calisthenics and running in place.

Dr. Paul Dudley White's recommendation for maintaining cardio-vascular fitness is a brisk four mile daily walk taking approximately one hour, or the equivalent of cycling, swimming, tennis or golf.

As might be expected, the recent surge of interest in physical fitness has excited some of the more innovative and inventive businessmen who are now selling the American public over two hundred million dollars per year² of various "fitness" machines including electrical shock devices, weight belts, various forms of vibrators, and motor driven and computer controlled stationary bikes. Generally, the advertising of many of these devices implies that fitness can be achieved without work.

Directions

Now let's take a quick look at some apparent directions which physical fitness programs are taking.

It appears that exercise program planners are beginning to emphasize definite periods of warm-up, endurance activity, and a cool-off phase to end activity sessions. The warm-up period is frequently devoted to calisthenics designed to increase the flexibility and strength of the musculo-skeletal system, especially the abdominal muscles, arms, and upper portions of the trunk.

Following this preparatory phase of the program, 15 minutes or more of endurance activity is undertaken. Endurance activity may take many forms, including sports participation which requires continuous heart rates of between 120 and 160 beats per minute. Currently, it seems that jogging is the most popular and widely used endurance activity.

The "cool-out" phase of the program usually lasts approximately 5 minutes and is composed of walking or tapering-off exercises to allow body systems which have been under stress to recover towards their normal rate of operation.

Exercise program planners have also recognized the necessity of providing trained leadership for participants who are beginning exercise programs. Experience has indicated that neither groups nor individuals generally can be turned loose and told to exercise. The tendency when this happens is for people to do too much, to go too fast, to expect too dramatic a result, and all too often to end up as discouraged drop-outs. A surprisingly high percentage of participants can be expected to complete three or four month "starter programs" that are carefully planned and skillfully led. Preliminary results concerning the Finnish Exercise Intervention Program given in New Orleans, Louisiana, at the 1969 Conference on the Epidemiology of Cardiovascular

Disease, reported a similar experience with a very high percentage of participants completing the initial phase of the program conducted by trained leaders.³

In addition to providing simple, physical leadership, the leader can serve as a motivating force by providing information concerning body systems affected by exercise, and what changes may reasonably be expected. He can emphasize and re-emphasize possible danger signals with which participants should be familiar. Simple heart rate checks are sometimes sufficient reason to refer a patient to his physician. An irregular heart rate or frequent so-called "skipped beats," a heart rate that fails to show recovery tendencies following exercise, and exercise heart rates that do not exceed the 120-130 range following the endurance portion of the exercise program should be checked.

Kasch and Boyer⁴ in their book *Adult Fitness*, sum up quite well the question of leadership when they say, "there is no substitute for trained, group leaders. Often the success of a fitness program depends on the availability and the training and personal interest of the leaders. Maintaining motivation and interest becomes a responsibility of those in charge. Few individuals develop a lasting commitment to fitness without a strong foundation developed by leaders in the early stage of their program."

Dangers

The dangers involved in participating in an exercise program designed to improve cardio-vascular fitness are not always apparent to potential program participants who are physiologically 50, but thinking 25. They often lack the knowledge to begin an exercise program at a level consistent with their current physical condition. They have a tendency to work too hard, too soon. Crash exercise programs are like crash diets. They have a notoriously poor batting average when it comes to permanently changing a persons living habits.

A second possible danger is that we may move too slowly in our efforts to emphasize the importance of meaningful physical activity programs in our daily lives.

M. F. Graham, M.D., has said, "if you can conceive as I do that a good program of life-long physical exercise can be life extending, then take the concept first to the child, next to the adult, and lastly (not least) to the middle aged and the aged. For in just that order will it serve its ultimate purpose."⁵

May I recall to your mind two reports of significance. In the Framingham Study, researchers followed the health of more than 5,000 adult residents for more than 10 years and found "the most sedentary has a distinctly worse outlook" than those that were more active. They suffered more heart attacks and the attacks were more likely to be fatal.⁶

Data from the Health Insurance Plan of New York study concerning the incidence and prognosis of coronary heart disease in a population of 110,000 adults, indicated the least active men in the population were at excess risk for onset of their initial myocardial infarction, and particularly for rapidly fatal attacks.⁷

Let me close with the results of an article entitled, "Don't Do As I Do."⁸ Two-thirds of the doctors in Western Australia, many of whom themselves prescribe exercise to maintain health of their patients, never exert themselves above walking. That lack of exercise was remarkably constant for all categories in medical practice, for all sizes and shapes of doctors, despite their age. The information was unearthed in a recent survey of male medical practitioners by Dr. K. D. Fitch, in Western Australia. Dr. Fitch fed 492 questionnaires into a computer to discover if doctors were practicing what they preached. He discovered that they aren't. Dr. Fitch stated that although "... the majority of enlightened medical opinion now recognizes the need for exercise, the

policy of most doctors is do what I say, not what I do."

WHAT TYPE OF COMMITMENT TO

EXERCISE PROGRAMS CAN WE EXPECT OF DOCTORS WHO SAY, "DO AS I SAY, NOT AS I DO?"

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QUANTIFYING PHYSICAL ACTIVITY—

HOW AND WHY?

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USAF, MC*

Maximal oxygen consumption during exhausting work is not only the best single physiological indicator of the capacity of a man for sustaining hard muscular work but it is also the most objective method by which one can determine the physical fitness of an individual as reflected by his cardiovascular system.¹⁻³ The maximal oxygen consumption ($\text{Vo}_2 \text{ max}$) is a laboratory measurement determined most frequently during exhausting work on either a motordriven treadmill or a bicycle ergometer. Treadmill testing is preferred because specific muscle development and specialized training are prerequisites to the achievement of maximum performance on a bicycle ergometer.^{3,4} Once determined, the $\text{Vo}_2 \text{ max}$ can be expressed in liters per minute (liters/min), milliliters per kilogram of total body weight per minute (ml/kg/min) or milliliters per kilogram of lean body mass per minute (ml/KgLBM/min). Although the last is pre-

Table 1
Levels of Cardiovascular Fitness Based On
Maximal Oxygen Consumption
(US Air Force Males 17-29 years of age)
Maximal Oxygen Consumption

Fitness Level	(ml/kg/min)
Very Poor	Under 25.0
Poor	25.0-33.7
Fair	33.8-42.5
Good	42.6-51.5
Excellent	51.6 or more

ferred, it is technically difficult to accomplish and maximal oxygen intake usually is expressed in ml/Kg/min.⁵

Before specific training programs can be developed to improve cardiovascular fitness, an endpoint or objective must be established. Such a standard has been established and is currently being used as a measure of cardiovascular fitness for male Air Force personnel 29 years of age and under (Table 1).

These studies constitute a slight modification of the performance ratings suggested by Balke^{6,7} but are less demanding than the ratings established for the Swed-

Wilford Hall Hospital, Lackland AFB, San Antonio, Texas.

ish civilian population (Table 2). The latter are used for comparison since according to Brummer⁸ the mortality from myocardial infarction in Swedish males 35-44 years of age is approximately one quarter

Table 2
Levels of Cardiovascular Fitness Based On
Maximal Oxygen Consumption
(Swedish Males 20-29 Years of Age)*

Fitness Level	Maximal Oxygen Consumption (ml/kg/min)
Low	Under 38.9
Somewhat Low	39.0-43.9
Medium Good	44.0-51.9
High	52.0-56.9
Very High	57.0 or more

*Fysisk traning hafte 1, Konditionstraning och Konditionstestning, 1964 ars upplaga, faststalls
CHEFEN FOR ARMEN Ao nr 80 4/2 1964 page 52

the mortality in American males of comparable age. Consequently, an age adjusted standard for cardiovascular fitness has been established for all U. S. Air Force males under 50 years of age which compares favorably with Swedish requirements (Table 3).

Table 3
Minimal Male Standards for Cardiovascular Fitness
Based on Maximal Oxygen Consumption
(ml/Kg/min)*

Age (Years)	USAF (Good)	Swedish (Medium Good)
17-29	42.6	44.0
30-34	41.0	
35-39	39.2	40.0
40-44	37.5	
45-49	35.8	36.0
50-54	—	
55-59	—	32.0

*Fysisk traning hafte 1, Konditionstraning och Konditionstestning, 1964 ars upplaga, faststalls
CHEFEN FOR ARMEN Ao nr 80 4/2 1964 page 52

Inasmuch as laboratory-determined Vo_2 max is impractical for large group studies, several efforts have been made to develop a field test of fitness that correlates well with laboratory tests. One attempt was made by Balke⁶ in which he suggests the use of a walk-run test relating Vo_2 max to distance covered in 15-minutes. A modification of this test was developed which utilized a 12-minute dis-

tance⁹ but an inherent weakness was readily apparent when large groups were tested. Accurate measurements of distances in 12-minutes were excessively time-consuming and prohibitive for large scale testing. Therefore, an interpolation from the 12-minute test was made and age-adjusted performance ratings established on the basis of the time required to walk and/or run 1.5 miles (Table 4) These standards have recently become the physical fitness requirements for U. S. Air Force male personnel under 50 years of age.

Table 4
Minimum 1.5 Mile Times and/or Maximal Oxygen
Consumption Requirement for USAF Males

Age (Years)	1.5 Mile Time (Min)	Max Oxygen Consumption (ml/Kg/min)
17-29	12:00	42.6
30-34	12:30	41.0
35-39	13:00	39.2
40-44	13:30	37.5
45-49	14:00	35.8

In testing several thousand Air Force male personnel, it was readily apparent that the majority were unable to meet the 1.5-mile standards. Consequently, an attempt was made to develop a physical conditioning program for the specific purpose of improving cardiovascular-pulmonary reserves. Endurance conditioning exercises were used in order to produce significant changes rapidly in both the cardiovascular and pulmonary systems. Since it was not the objective of this program to develop competitive endurance athletes, only those exercises which required some type of moderately vigorous activity were evaluated. The primary objective was to develop a cardiovascular system that could tolerate unexpected emergencies¹⁰ and, perhaps, delay the onset of ischemic vascular disease.¹¹

As the various prerequisites for optimum cardiovascular conditioning became apparent, it was realized that a reliable method was needed for comparing types

QUANTIFYING PHYSICAL ACTIVITY

and patterns of exercise before a training program could be developed. In searching for a method of equating different exercises, it was found that the oxygen or metabolic cost was the ideal common denominator. This value could be obtained readily by collecting and analyzing the expired air during a standard performance i.e., walking, running, or cycling a known distance in a specified time. Since the oxygen cost of a physical activity is related to the level of fitness and the weight of the subject, it was necessary to study a cross section of highly conditioned athletes and deconditioned subjects of variable weights. In addition, another investigator's¹² work was reviewed and the results were comparable (Table 5). A system estimating the metabolic cost of the exercise was developed utilizing the Excess Oxygen Consumption, i.e., the total minus the resting oxygen requirement. Then, the metabolic cost was con-

verted into ml/Kg/min and a simple point system established. The assigned points, in multiples of seven, represent the *approximate* excess oxygen cost or consumption in ml/Kg/min (Table 6). It should be noted that points are awarded in a stepwise rather than a linear manner for the slowest performance in each time interval. Consequently, in some instances, fewer points are awarded than the energy expenditure actually indicates. Ultimately more effort will be required to reach any point goal.

Table 6

Assigned Point Values for Walking and Running	
Mile Time (Minutes)	Assigned Point Value
20:00 or over	0
14:30-19:59	1
12:00-14:29	2
10:00-11:59	3
8:00- 9:59	4
6:30- 7:59	5
Under 6:30	6

Table 5

Metabolic Cost for Walking and Running
(Kcal/min)

Mile Time (Min)	Cooper Excess Vo_2 †	Cooper Total Vo_2 (78.51 Kg)	Pollack et al Total Vo_2 (66.0-86.0 Kg)
5:10	—	18.0	19.0*
6:15	16.6	18.0	
6:45			15.0*
7:00	15.0	16.5	
8:00	14.2	15.6	
8:34			13.5*
9:00	12.8	14.0	
10:00	12.2	13.5	
10:20			11.0*
11:00	12.1	13.5	
11:36			11.2
12:00	10.1	11.5	
13:00	7.5	9.0	8.0*
13:24			8.3
14:00	6.6	8.0	
14:30	5.7	7.2	
15:00	5.0	6.5	
17:00	4.6	6.0	
18:42			5.3
20:00	3.4	4.9	4.4

†Excess Vo_2 = Total oxygen consumption—(Resting oxygen consumption per minute x duration of run in minutes)

*66.0Kg male

After quantitation of the various types of physical activities, the next objective was to establish a fitness goal, i.e., the number of points per day or per week required to enable most people to achieve an oxygen consumption of at least 42 ml/Kg/min (age adjusted). Studies were initiated to evaluate subjects who had achieved this level of fitness, and then deconditioned subjects were placed into a variety of exercise programs. The number of points attained by the conditioned subjects was determined, and different point goals were established for the deconditioned subjects. These studies demonstrated that exercise averaging 30 points per week would produce the desired level of cardiovascular-pulmonary fitness in the majority of individuals, provided this fitness was achieved progressively over a 10 to 16 week period. Examples of several 30-point per week programs are presented in Table 7.

Next, studies were initiated to evaluate the effectiveness of progressive exercise

QUANTIFYING PHYSICAL ACTIVITY

Table 7

30-Point-Per-Week Exercise Programs				
Activity	Distance (Miles)	Time (Min)	Points	Freq/ Week
Walking	2.5	30:00-36:14	5	6
	3.0	36:00-43:29	6	5
	5.0	60:00-72:29	10	3
Running	1.0	6:30-7:59	5	6
	1.5	12:00-15:59	6	5
	1.5	9:45-11:59	7½	4

programs terminating in 30-point per week energy expenditures. In young basic airmen, it was shown that an accelerated five week conditioning program progressing up to 30 points per week produced good results, whereas older men also responded well, but in a 12-week period their progress was not quite as rapid (Table 8).

Summary

In this study, an attempt was made to define cardiovascular fitness objectively on the basis of the maximal oxygen consumption. Using this indicator of fitness, a field test was developed which correlated

Table 8

Response to Training as Measured by Ability to Run 1.5-Miles Under 12:00 Minutes				
	Basic Airmen (19.1 yr)*		Officers (28 yr)†	
	After Tng		After Tng	
	Before	5 Wks	Before	12 Wks
%Running 1.5 miles				
under 12:0 Min	37.9	84.2	17.1	79.7
Number Tested	1,442	1,442	1,028	1,028

*Tested in brogans or combat boots

†Tested in tennis shoes

well with the laboratory-determined maximal oxygen consumption. In addition, a program of exercise was developed which would enable the majority of individuals to reach an age-adjusted standard of fitness within 16 weeks. Whether this standard of fitness will have an effect on the frequency and/or severity of cardiovascular disease in the United States, is a question that only longitudinal studies will answer. But now, we at least have a standard and a means for reaching that standard, from which such studies may begin.

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PHYSICAL ACTIVITY AND THE PREVENTION OF CORONARY HEART DISEASE: WHAT TYPE EXERCISE MIGHT BE EFFECTIVE

WILLIAM L. HASKELL, Ph.D.*

During the past decade substantial information and interest has been generated regarding the possible role of an increase in habitual physical activity in the primary prevention of coronary heart disease (CHD).^{1,2} Numerous individuals and organizations are now proceeding under the assumption that an increase in habitual physical activity by sedentary asymptomatic adults will reduce their chances of acquiring or dying from CHD and are recommending to them a wide variety of exercise programs. Unfortunately, the characteristics of these exercise programs frequently bear little resemblance to the physical activity described in scientific studies demonstrating an association between greater habitual physical activity and a reduction in the frequency or severity of CHD. The purpose of this presentation is to review some of the available data that seems pertinent in determining the nature of the habitual physical activity that might be effective in favorably altering CHD frequency, severity or age of onset.

First, it is important to recall that no study has been reported in the literature in which influence of an *increase* in habitual physical activity by previously sedentary individuals on the initial manifestations of CHD (angina pectoris, myocardial infarction or mortality) has been systematically investigated. Data in support of this hypothesis, that an increase in habitual physical activity by sedentary adults will reduce the frequency or severity of CHD, has been derived on the most

part from three types of studies, all of which provide only indirect evidence of a causal relationship.

Epidemiological Studies. The most frequently cited studies in support of the possible beneficial role of increased physical activity in the primary prevention of CHD are the epidemiological or observational studies in which individuals classified as more active according to occupational and/or leisure time physical activity generally seem to have less CHD than their more sedentary counterparts.¹ The results of these studies provide direct support for the hypothesis that individuals who are selected for or who select more active occupations and/or leisure time activities experience fewer and less severe CHD episodes, but they provide only indirect support for the hypothesis in question, "will participation in a physical training program by sedentary adults reduce their chances of acquiring or dying from CHD."

"Risk Factor" Studies. Numerous attempts have been made to determine the influence of an increase in physical activity on factors related to an increased risk of acquiring or dying from CHD (i.e., serum lipids, blood pressure, glucose tolerance, etc.). To utilize data from this type of study necessitates making the inference that if you alter the risk factor you inhibit or delay the disease process or enhance the individual's resistance to it. The intensity of exercise programs of short duration (up to 6 months) required to produce significant changes in biological risk factors associated with increased CHD without changes occurring simultaneously in dietary habits, cigarette smoking and body weight appears to be sub-

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stantially greater than that needed to change cardiovascular functional capacity as measured by heart rate response to a standard workload or increases in maximal oxygen consumption.

Cardiovascular Function Studies. A frequent source of data for the inference that exercise provides a preventive effect against CHD are the results of studies on the influence of physical training on the capacity or efficiency of the cardiovascular or total oxygen transport and metabolic systems.^{2,4} Here it is not necessary to assume that the disease process is favorably altered since with an increase in oxygen transport or metabolic capability or efficiency an individual *may* be able to withstand the same or even greater disease without suffering the detrimental consequences of myocardial ischemia and infarction.

In addition, numerous inferences concerning the possible primary preventive effect of physical activity have been made from the results of secondary prevention or rehabilitation studies on post-infarction patients.⁵ Such inferences may or may not be appropriate but as of now we do not know for sure. The same situation exists for clinical or personal observations.⁶

The epidemiological studies, as limited as they may be due to design, the process of self selection by the subjects, and confounding variables, still provide us with the only data actually showing an association between level of habitual physical activity and initial manifestations of CHD. A close look at the results of certain of these studies reveals some valuable information about the nature of the physical activity needed to provide this protective influence, if indeed it does exist.

The types of activities which appear to contribute most to the classifying of individuals as more active instead of inactive or sedentary include walking on the level and upstairs, the lifting of light objects, the operation of machinery or appliances,

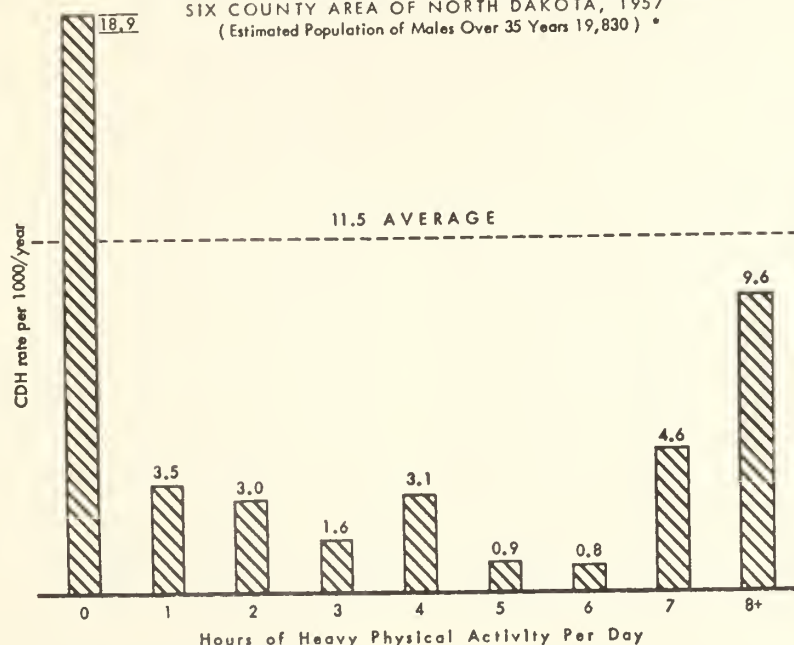
gardening and participation in certain games or sports. Participation in "physical fitness programs" contributes very little to this classification. In most studies the activity used for classification purposes has been that performed on the job, but from the Health Insurance Plan of Greater New York Study it appears that both occupational and leisure time physical activity need to be considered if accurate estimations of an individual's physical activity level are to be made.⁷

The difference in the amount of physical activity performed by individuals considered inactive and active is not great. In several studies, the Evans County Study by Skinner and colleagues⁸ and the study on railroad workers by Taylor and colleagues,⁹ where the energy expenditure of the various activity groups has been assessed, the difference in daily caloric expenditure of "active" and "inactive" groups is in the 400-500 Calorie range. Thus, over a 6 to 8 hour work-day the average difference in energy expenditure between "inactive" and "active" individuals is approximately 1 to 1½ Calories per minute.

A closer look at the physical activity classifications in several studies reveals that the greatest differences in CHD frequency or severity between groups with different activity levels occur between groups classified as sedentary and those classified as only slightly more active. Zukel and colleagues¹⁰ observed a striking difference in CHD rates between individuals who had active and sedentary occupations in a six county area of North Dakota. A more detailed analysis of Zukel's data shows that persons reporting from one to two hours of "heavy physical work" per day had 18% the incidence of those individuals reporting less than one hour of heavy physical activity per day.¹¹ As can be seen in Figure 1, no systematic increase in protection is associated with an additional increase in the num-

ACTIVITY AND PREVENTION OF DISEASE

INCIDENCE OF CORONARY HEART DISEASE BY HOURS OF HEAVY PHYSICAL ACTIVITY AT USUAL OCCUPATION SIX COUNTY AREA OF NORTH DAKOTA, 1957 (Estimated Population of Males Over 35 Years 19,830) *



*Study based on a 10% population sample.
Does not include 3% of sample (32% CHD occurrence) on which incomplete occupational physical activity was obtained.
Age distribution considered unlikely to be responsible for lessened incidence in 1-7 hour groups.

Figure 1

ber of reported hours of heavy physical activity per day.

In the most recent report from the Health Insurance Plan of Greater New York Study individuals classified as *least active* had an incidence rate for initial myocardial infarction greater than twice that experienced by individuals with a physical activity classification of *intermediate*.¹² As far as acquiring an initial myocardial infarction, being classified as *most active* did not provide any additional protection but for early mortality it does seem to provide some additional

benefit (Table I). It is surprising how little physical activity at a low intensity a sedentary individual would have to perform in order to be placed in the more favorable *intermediate* group, in some cases no more than about 100 calories per day.

The type, amount and intensity of activity needed to place individuals into a more active classification and thus generally into a group with fewer and less severe manifestations of CHD appears to have a relatively small influence on physical fitness or work capacity as commonly

Table I
Incidence of Initial Myocardial Infarction and Early Mortality Among Men Under 65
In Relation to Physical Activity Habits*

	No. 1st MI's per 1,000 men at risk per year	Percent of men with 1st MI dying within 1 month	No. deaths within 1 mo. of 1st MI per 1,000 men at risk per year
Least Active	8.52	43.6	3.71
Intermediate	4.19	28.6	1.20
Most Active	4.20	20.5	0.86
TOTAL	5.20	36.0	1.87

*Data from Health Insurance Plan of Greater New York (HIP) Study.

Table II
Comparison of Pulse Rate Response to Modified Balke Treadmill Test for Men Aged 40-59
by Race and Social Class

Variable	White Males		Negro Males
	HSC* (N=18)	LSC† (N=17)	(N=19)
Pulse rate at 2 min.	116	113	120
Pulse rate at 4 min.	125	124	128
Pulse rate at 6 min.	144	140	145
Time to pulse rate 160 (min.)	10.6±2.4	10.3±2.8	9.8±3.2

*HSC—High social class

†LSC—Low social class

measured. Skinner and colleagues using a modified Balke treadmill test evaluated samples of men in Evans County, Georgia, whose daily physical activity varied as determined by their occupations and answers to a detailed physical activity questionnaire.⁸ The prevalence of CHD was significantly less in the more active groups (low social class white males and Negro males) but no differences were observed between their work capacity and that of the less active group (high social class white males). See Table II.

In the railroad study by Taylor and colleagues the more active switchmen had a heart rate response to a standard submaximal exercise test (treadmill walk at 3 mph, 5% grade for 3 minutes) approximately 9 beats slower than the less active clerks.⁹ About $\frac{1}{3}$ of this difference, however, can probably be attributed to the poorer mechanical efficiency of the clerks and the remainder to actual differences in work capacity (Table III).

Thus, in order to obtain some protection against CHD through physical activity it may be that the activity level does not have to be very great and that it does not have to have a very substantial influence on

physical work capacity. The question would now seem to be, will activity of greater intensity but performed for a shorter duration than that accounting for the difference in epidemiological studies provide the same or a greater degree of protection? Also, based on these and similar type data it seems appropriate to raise the possibility that the protective effect of physical activity from a primary prevention standpoint might be a reoccurring, acute or temporary effect of reasonably low intensity activity performed on a very regular or routine basis and not a chronic training effect as we usually attempt to measure in the evaluation of physical fitness program participants. Such an effect could be mediated through a variety of biochemical changes in the blood or myocardium. Low to moderate levels of physical activity may induce favorable but transient changes in the blood clotting or fibrinolytic systems,¹³ serum lipoprotein levels,¹⁴ or chemical regulation of the myocardium.¹⁵

It should not be overlooked, however, that in addition to any protection provided by the routine performance of relative low intensity activity, moderate to high intensity physical training programs may provide some additional biological as well as psychological benefits. Several investigators have reported decreased electrocardiographic abnormalities, especially ischemic RS-T segment displacement, in otherwise asymptomatic subjects whose test workload following a physical training program was the same or heavier than their workload prior to training.^{5,17} These changes might be due to improved

Table III
Comparison of Pulse Rate Response of Switchmen
and Clerks to a Submaximal Treadmill Test
(3 mph, 5% grade, 3 min.) According to Age

	Age			
	40-44	45-49	50-54	55-59
CLERKS				
N	158	172	209	216
Pulse Rate	117.4	121.4	122.2	123.0
SWITCHMEN				
N	265	231	137	138
Pulse Rate	110.7	112.5	113.4	112.4
Difference	6.7	8.9	8.8	10.6

myocardial efficiency, changes in peripheral distribution of blood and its return, decreased pressure or flow requirements, as well as to a possible increase in coronary vascularization.

A direct measurement of myocardial oxygen requirement or expenditure is not readily obtainable. Indirect measures, however, indicate that participation in an endurance type physical training program may enhance myocardial or total cardiovascular efficiency during rest and exercise. Changes occurring with training which may result in a reduced myocardial oxygen requirement for the same level of exertion include (1) bradycardia during rest and submaximal exercise, (2) an increase in resting and exercise stroke volume, (3) an increase in maximum cardiac output, (4) an increase in velocity of contraction, (5) myocardial hypertrophy (6) a decrease in systematic arterial pressure, and (7) redistribution of blood flow to the more active muscles.¹⁷ The significance of these changes relative to the conse-

quence of the atherosclerotic-thrombotic disease process is that the lower the oxygen requirement of the heart (during rest or any level of exercise) the lower the coronary flow rate can be and still be adequate.

Recent reports on the effect of moderate exercise programs lowering heart rate relative to their intensity and duration, such as the study on blind men performed by Siegel and colleagues,¹⁸ are encouraging when combined with the results from the Framingham Study¹⁹ which indicates that individuals with lower resting heart rates are less likely to die from CHD than individuals with higher heart rates. This relative bradycardia observed in the Framingham Study may be inherited or may be due to more active living habits.

In summary, we should remember how little we know about the effect of increasing physical activity or performance capacity on the primary prevention of CHD when we begin providing recommendations for this purpose.

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Exercise and the Treatment of Heart Disease

TECHNIQUES OF EXERCISE PRESCRIPTION AND EVALUATION

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Thank you for those kind words of introduction, Dr. Summerall. The present workshop on Exercise and Heart Disease itself is a marvelous "happening" in America today, wherein cardiologists and physical educators have convened, to admit their ignorance about each other's disciplines, particularly about heart function, training and fitness, and to find a mutual meeting ground in the assault on heart disease.

Originally I intended to present a paper entitled "The Value, Limitations, Indications, Contraindications and Methods of Exercise Prescription." If we were to accept without reservations the earlier reports in this workshop (particularly those of Colonel Kenneth Cooper and others), I should sit down without further ado, since the objectives of my assignment would already have been completely attained. I hasten to add that exercise prescription for healthy young military service men with an average age of 22 years (as in Cooper's report in the *JAMA*¹) differs in many important ways from that for middle-aged, pot-bellied, overweight, cigarette smoking, hypercholesterolemic, and somewhat hypertensive coronary-prone males. The differences include those of magnitude, frequency and duration of the training, motivation, adherence, and availability of personnel and equipment.

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Despite these differences general principles of sound conditioning can be applied at all ages and in all states of health^{2,3} viz.: 1. there must be an overload of the muscles (skeletal and heart); 2. the progression of exercise must be gradual and continuous; 3. all exercise must be beneficial; 4. exercise must build both strength and muscular endurance, and 5. it must be part of a more comprehensive treatment program, including supervision, periodic evaluation, diet and medication when indicated, as well as attention to psychological and social adjustment.³

Our current views on exercise prescription and evaluation are based on an eight year prospective study of the effects of enhancement of physical fitness of 656 middle-aged men, of whom 254 have coronary artery (ASHD), and the remainder possessed several characteristics indicative of a marked predisposition to the premature development of coronary heart disease (NCP) (normal coronary prone subjects).⁴⁻⁶ In addition to active conditioning, the Case Western Reserve University-Jewish Community Program involved weight control, dietary therapy when indicated, cessation of smoking, and regular performance of exercise. Multidisciplinary serial evaluations revealed that the ASHD and NCP subjects were able to perform muscular effort more efficiently than before training, i.e., with fewer heart beats, lower blood pressure, and greater aerobic capacity. In addition, the heart rate at rest and sleep was decreased. Ischemic ST-T changes in the exercise electrocardiogram decreased in approximately two-

EXERCISE PRESCRIPTION AND EVALUATION

Table 1

Indications and Contraindications for Participation in Programs Planned to Enhance Physical Fitness

Indications	Contraindications	Others
Normal subjects, especially highly coronary prone, general deconditioning, neurocirculatory asthenia, before and after surgery*	Cardiovascular Severe (80-90%) stenosis of three major coronary arteries Rapidly progressing angina Impending infarction Massive ventricular aneurysm Congestive failure Arrhythmias ventricular tachycardia 2nd, 3rd A-V block fixed ventricular rate pacemaker untreated atrial fibrillation ventricular premature beats at rest which increase with exercise Valvular Disease moderate to severe outflow obstruction Uncontrolled hypertension	Uncontrolled diabetes mellitus Marked obesity Deforming arthritis* Skeletal-muscle disorders Psychosis Recent pulmonary embolism Severe varicose veins with thrombophlebitis, phlebothrombosis Anemia Central nervous system disease*
Arteriosclerotic heart disease* Intermittent claudication* Pulmonary disease*		
Caution DRUGS: reserpine, propranolol, guanethidine, ganglionic blockers, procaine amide, quinidine		

*Selected cases.

thirds of the subjects after a conditioning program. Studies of subsamples of our study population (and in other reports) showed improvement of cardiovascular hemodynamics (increased stroke volume, decreased tension time index, increased vigor of the heart beat, dp/dt), decreased lactate production for the same work load.⁸⁻¹⁰ decrease of psychological depression, and enhancement of sexual activity.⁷

Since adherence to the training program plays an important role in determining the magnitude of the benefit therefrom, the factors which modify adherence must be considered in any prescription. Some of the most important include organization of the program design, preliminary and follow-up evaluations, exclusion of subjects with specific contraindications (Table 1), supervision, the recreational aspects, positive reinforcement effects of the camaraderie of the group stimulus, regularity of the exercise sessions, positive attitude of the spouse toward the exercise program, reward sys-

tem and recognition, and even distinctive symbols of participation.

Evaluation prior to entry into a fitness program. Like all potent therapeutic measures, exercise and activity prescription for normal coronary prone subjects, particularly those above 30 to 35 years of age and those with ASHD requires preliminary medical evaluation, particularly of cardiovascular status and function. Furthermore, it is important to exclude the ineligible subjects among the ASHD group as well as in NCP (Table 1). My associates and I in Cleveland, and Dr. Ron Sylvester in California (personal communication) have estimated that approximately one-third of ASHD subjects are eligible for physical training at levels higher than walking and self care. Since epidemiologic studies have demonstrated that approximately 20 per cent of all subjects who sustain a myocardial infarct do so "silently," and since a significant per cent of ostensibly normal middle-aged men have occult coronary insufficiency, readily detected in 10 to 20 per cent of subjects

by high level exercise testing, electrocardiograms at rest and during multilevel exercise should be obtained in *all* adults who enter a training program.

It is at this juncture that I wish to take sharp exception to the currently popular practice of some devotees of Colonel Cooper's book on Aerobics who without medical advice, approval, supervision, or controlled pretesting, often expose themselves to the stress of a maximal performance of the suggested 12 minute test and then enter into a mass jogging program, which often creates a feeling of competition. In the past several months, I personally have seen many who have become symptomatic after such medically unsupervised activity and have heard of deaths occurring during such activities. Although the exact details have not been published, it seems that the deaths occurred in locales where resuscitative equipment and properly trained personnel were not immediately available.

Table 2

Target Levels for Training

In Absence of "Strain"

- 60-70% maximal aerobic power (M.A.P.)
- Heart rate=60-70% M.A.P.
- Age adjusted maximal heart rate (M.H.R.)
 - Average 70% M.H.R.
 - Peak 85% M.H.R.

In Symptomatic Subjects

- Heart rate
 - Less than that which produces
 - ECG changes (Marked ST-T, ectopics)
 - Inappropriate B. P. response
 - Symptoms & signs (severe pain, dyspnea, confusion)
- Symptoms
 - Pain—intensity, distribution
 - Dyspnea
 - Central nervous system

Exercise Prescription. The purpose of preliminary evaluation of cardiovascular function is not only to exclude the ineligible, but primarily to determine a target level for training at a given time. (Table 2). In follow-up evaluations, the target level may be increased or reduced, if im-

provement or deterioration occurs respectively. The pre-training evaluation of functional status must be multilevel (steps, treadmill, bicycle ergometer) and of sufficient magnitude and duration to achieve a steady state and to tax the individual to approximately 80-85 per cent of his capacity, or to elicit evidence of "strain," if at a lower level. The prescribed effort for training should not exceed that of the exercise testing. Evidence of "strain" includes the appearance of frequent ventricular ectopic beats or tachycardia, atrio-ventricular, intraventricular conduction defects, marked ST-T displacement (3 or more millimeters) or less if associated with severe angina pectoris or equivalents, disproportionate blood pressure responses (too high or too low—failure to increase blood pressure with higher work levels), central nervous symptoms of confusion, incoordination, chest pain with increasing radiation and severity, and excessive dyspnea. For the subjects who do not develop electrocardiographic changes or arrhythmias with multilevel exercise, a target heart rate is determined which is 70 per cent of the predicted maximal heart rate for the age, with provisions that a rate of 85 per cent of the maximal heart rate be attained intermittently during the exercise sessions. In the prescription of target heart rates, one must take into account the fact that the maximal heart rate decreases with age. Thus the maximal heart rate at the age of 35 years is approximately 188 beats, whereas the average maximal heart rate at the age of 55 years is approximately 165 beats. Thus the minimal training target rate of 70 per cent in the former would be 132 beats and in the latter 115 beats. Seventy per cent of the maximal heart rate corresponds to approximately 50 per cent of the maximal oxygen uptake, and 85 per cent of the maximal heart rate corresponds to approximately 75 to 80 per cent of the maximal oxygen uptake.

In the ASHD subjects, or in the nor-

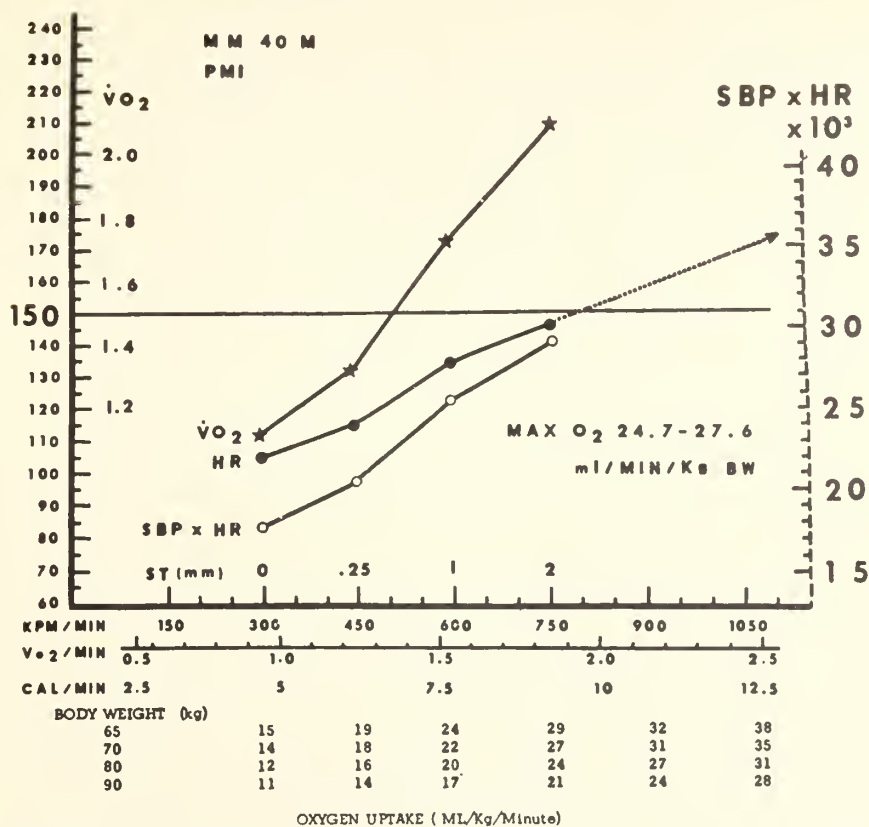


Figure 1. Work diagram showing relationship of work load to heart rate, ST segment displacement, and oxygen uptake. Discussed in text.

mal coronary prone subjects who showed evidence of "strain," the target heart rate is determined as that rate below which the "strain" appears. The caloric value of the "strain" level can be readily obtained from a plot of the work and heart rates and related to the caloric cost of various activities such as walking, swimming, bicycling etc.¹³

In ASHD subjects the limiting factor may be the maximal heart rate, which often is significantly reduced even in the absence of ischemic ST-T changes. Thus in middle-aged normals, the average maximal heart rate is 165 to 170 beats, and in similar aged ASHD it is only 140 beats. Even though "strain" does not appear, the ceiling on the heart rate may determine the level of training. An extreme example is the ASHD subject who has marked sinus bradycardia at rest (36 per minute)

and reaches a maximal heart rate and oxygen uptake at 96 to 100 beats per minute.

Examples

In Figure 1, the study subject (ASHD male, 90 kg body weight) developed 2 mm ST segment displacement and a heart rate of 143 at 750 KPM/Min., equivalent to an uptake of 21 ml O_2 /min/Kg BW (5 mets). Obviously the initial exercise to be prescribed would be below 5 mets. The target heart rate (rate to be attained during exercise) would be the heart rate obtained below the level at which "strain" appeared. A table of oxygen cost of walking at various speeds is useful in prescribing walking as exercise therapy (Table 3). In the subject cited above whose "strain" level of oxygen uptake was 5 mets, the initial training level would be 60 to 70 per cent of this value (3.5 mets, 14 ml O_2 /min/Kg BW), equivalent to the heart rate

Table 3

Relationship Between Speed of Walking (MPH) and Energy Expenditure (O_2 and METS)⁽¹³⁾

Speed MPH	Minutes Per Mile	MI O_2 /Min Per Kg BW	METS
Rest	—	4.0	1.0
2.0	30.0	9.0	2.2
2.5	24.0	11.0	2.8
3.0	20.0	12.5	3.1
3.5	17.1	14.5	3.6
4.0	15.0	16.0	4.0
4.5	13.3	19.0	4.8
5.0	12.0	24.0	6.0
5.5	10.9	30.0	7.5

of 115 produced at 450 KPM/Min (Figure 1) and equal to walking 3.5 (Table 3). He would be started somewhat below this level (at 2.5 to 3.0 mph—2.8 to 3.1 mets) and the pace ordinarily increased in several weeks to 3.5 mph, as tolerated. His target heart rate would be 115 to 120. In 6 to 8 weeks, the majority of the patients would advance to 4 to 5 mph (4 to 6 mets) comfortably. Multilevel bicycle ergometer retesting would then be performed for further prescription. In a similar fashion, other activities can be prescribed (bicycling, swimming and certain types of dancing). Table 4.

Figure 2 is a diagram of the responses to multilevel bicycle ergometer of a 54 year old male with angina pectoris, who angiographically demonstrated marked diffuse involvement of all three major coronary arteries, and normal ventricular hemodynamics. His maximal aerobic power was 6.5 mets (29.6 ml O_2 /Min/Kg BW). As the work level increased from 300 to 600 KPM/Min (3.1 to 5.1 Mets), the respiratory exchange ratio increased from 0.89 to 1.01, the latter value indicating the onset of anaerobic metabolism. The heart rates (118 and 135) at 4.3 and 5.1 Mets respectively were equivalent to 70 to 79 per cent of age-determined maximal heart rate, and 67 and 84 per cent of the subject's maximal oxygen uptake. A program of exercise training was suggested, with preliminary warm-up, alternate jogging and walking, gradually increasing

the speed levels of jogging, each succeeding level at a pace designed to increase the heart beat progressively to a target maximum of 135 beats at the final jogging level. Figure 3 (upper panel) demonstrates that when the subject jogged continuously at 6 miles per hour (approximately 8 Mets) he covered a maximal distance of 660 yards in 3.5 minutes, and developed a heart rate of 150 which was associated with severe angina pectoris.

Figure 3 (lower panel) demonstrates that the subject was able to cover 2 miles distance in 30 minutes (walking 4 miles per hour—4 Mets) with a heart rate of 110 beats per minute, without chest or arm pain. The energy level and heart rate response were slightly less than that of 450 KPM/Min of bicycle ergometer exercise, equal to slightly less than 70 per cent of maximal heart rate. Improvement in endurance but not in strength would be expected to be attained by this effort.

Table 4

Mean Energy Expenditure of Various Activities¹³

Activity	MI O_2 /Min/ Kg BW	Mets
Sleeping	3.2	0.8
Awake, lying at ease	3.4	0.9
Daily living activities		
Toilet—wash, dress, shave	8.4	2.1
Sit at ease	4.0	1.0
Stand at ease	4.8	1.2
Effort		
Walking on level		
at 3 km/hr.	8.4	2.1
Walking uphill		
5% grade at 3 km/hr.	12.0	3.0
Walking upstairs	24.0	6.0
Skiing cross country	26-44	6.6-11.0
Bicycling (mph)		
5.5	12.9	3.2
9.5	20.0	5.0
13.1	31.4	7.9
Swimming breast-stroke (yds/min)		
20	14.3	3.6
30	21.4	5.4
40	28.6	7.2
Dancing		
Foxtrot	14.9	3.7
Waltz	16.3	4.1
Rumba	20.0	5.0

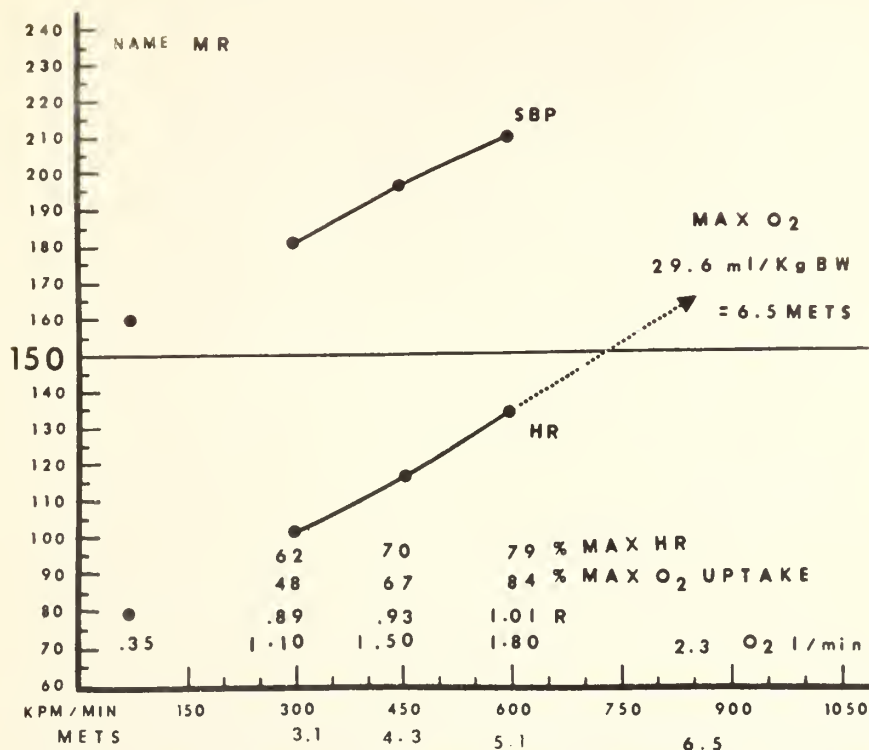


Figure 2. Work diagram of ASHD subject showing relationships of work load to heart rate, oxygen uptake, Mets, and respiratory exchange ratio. Same patient as in Figures 3 and 4. Discussed in text.

Figure 4 shows his response to the prescribed plan of training which resulted in marked improvement in performance and stamina, without producing significant

angina pectoris. The subject covered 2 miles in 30 minutes by alternating running-jogging and walking sequence (interval training). With this schedule, the

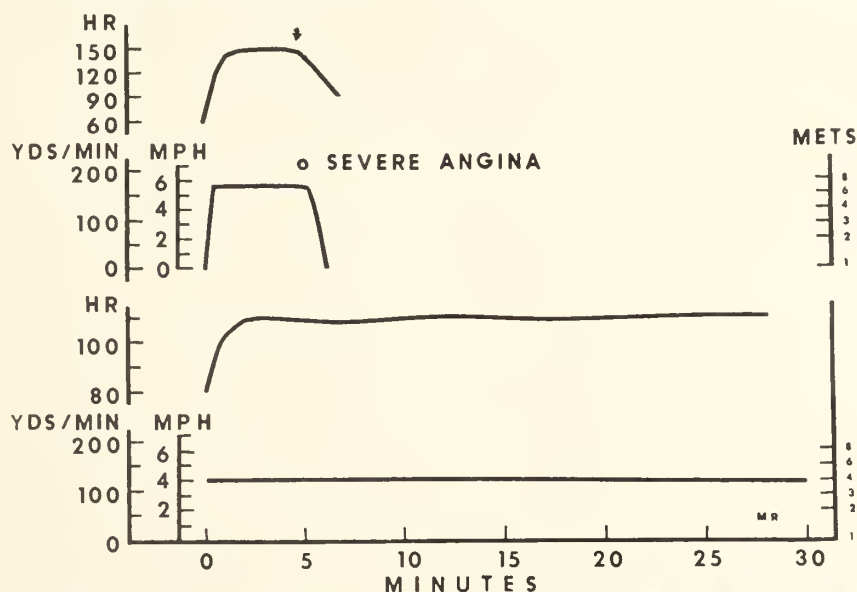


Figure 3. Responses to jogging without warm-up (upper panel) and to walking at 4 miles per hour. Discussed in text.

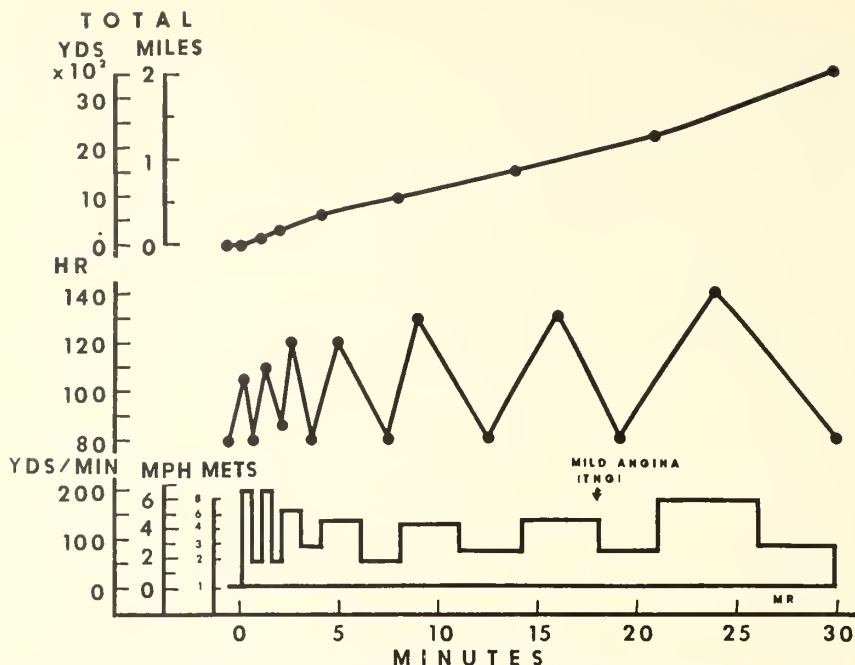


Figure 4. Response to recommended plan of interval training. Discussed in text.

subject had a total jogging distance of 2,510 yards, in an accrued jogging time of 16 minutes of the 30 minutes exercise period. In the last jogging sequence (minutes 21 to 26) he was able to jog at the rate of 6 miles per hour (6 Mets) with a heart rate of 140 beats but without discomfort in contrast to his performance in Figure 3 (upper panel) where he developed severe angina and a heart rate of 150 beats. The improved performance was due to the preliminary warm-up period and on occasion to sublingual nitroglycerin taken prior to the last sequence.

Application to groups of subjects. In our initial studies^{3,4} we empirically decided that the exercise prescription should require full participation of one hour three times a week, recognizing that probably an average of 2 to 2.5 hours optimally over a long period of participation would be attained. In our analysis of our prospective study, this judgment was supported by the finding that significant improvement occurred in fitness and in the subjects who trained from 2.2 to 3 hours

per week, and less significant improvement from 1.0 to 2 hours per week.^{5,6} Saltin and his associates have shown that improvement in function in normals and blind subjects required two exercise sessions per week.¹⁴

The intensity and the duration of the individual conditioning sessions in the Case Western Reserve University-Jewish Community Center study have likewise been prescribed initially on an empirical basis, and in the last several years, the former (intensity) has been based on the principles described above. The minimal duration for sustained significant cardiovascular benefits has not yet been established.

In the CWRU-JCC study, following the evaluation of each subject, a program was formulated to enhance his overall fitness.^{4,6} The subject met with a study physician and a physical educator who reviewed with him the results of all tests performed, answered any questions and prescribed for him a specific exercise program. The exercise program purposely

EXERCISE PRESCRIPTION AND EVALUATION

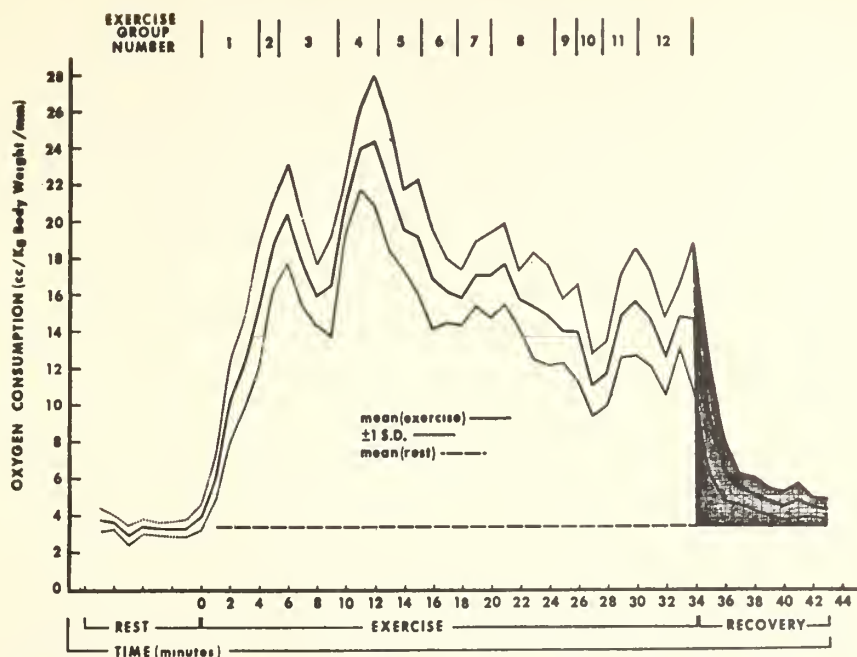


Figure 5. Oxygen cost of consecutive performed calisthenics done routinely in the Western Reserve Physical Fitness Program. Exercise numbers signify performance of the following exercises: 1) shoulder exercises, standing, warm-up; (2) hops, walk steps; (3) arm sweeps, standing; (4) hops, sailor's hornpipe; (5) body bends; (6) leg exercises, supine; (7) leg-arm-hip exercise, sitting on floor; (8) leg exercises, lying on side; (9) leg exercises, bicycle movements, supine; (10) sit-ups; (11) push-ups, and (12) shoulder exercises, standing, cool off.

was not restricted solely to running or calisthenics. It consisted of walking and running to build endurance and calisthenics, for endurance compounded to stress each subject to approximately 60 to 70 per cent of his aerobic capacity or to a level at or slightly below his "strain" level. The caloric expenditure of full participation totalled approximately 400 calories per hour (average 4.5 Mets). Calisthenics required 200 calories (average 4.4 Mets, maximal 6 Mets) over a 30-minute period (Figure 5), run-walk sequences, 120 calories (5.2 Mets) over a 15 minute period, and recreational exercise for fun, 80 calories (3.5 Mets) over a 15 minute period. Since the average subject on entry had a maximal aerobic power of 6 to 7 Mets, few were entered at full participation. Most individuals began by performing one-half to two-thirds of each series of calisthenic exercises, and slower paces of the run-

walk sequences. The design of the calisthenic sequences purposely included a warm-up period, work period, and a tapering-off period. Run-walk sequences were initially prescribed at low levels of work and were gradually increased until a subject could run a mile. Recreational activity, i.e., basketball, volleyball, swimming, bag punching, etc., was advocated, but highly competitive games demanding sudden spurts of energy were proscribed.

In addition, the subjects were advised to be active physically elsewhere, to climb stairs, to avoid the use of elevators, to walk instead of riding a vehicle, to park further away from the parking lots, etc.

Each subject was encouraged to attend the exercise classes at the Jewish Community Center of Cleveland, and to keep a record of his attendance, noting his reactions to the exercise program. A staff physical educator examined the records

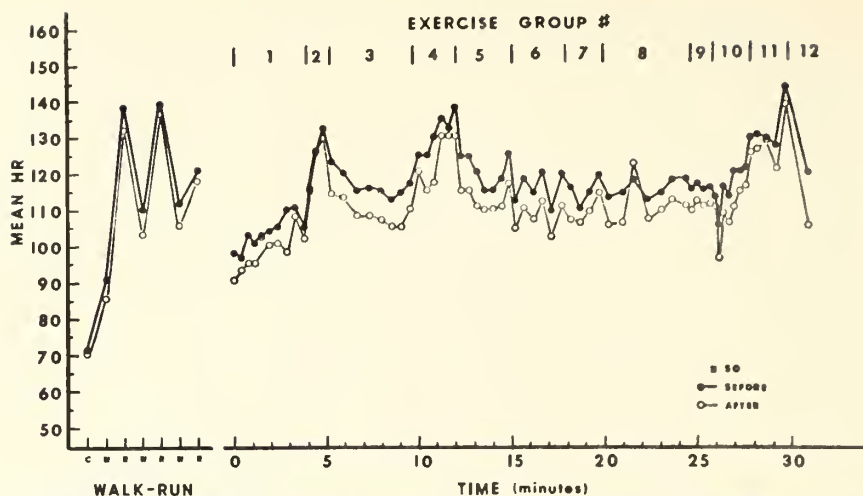


Figure 6. Average heart rates of walk-run sequences (W=walk, R=run, C=control) and of consecutively performed calisthenics done routinely in the Case Western Reserve University Physical Conditioning Program.

at monthly intervals and determined whether he was ready to progress to a more strenuous level of work.

In general, during calisthenics, the average heart rate was 120 beats per minute, which represents 70 per cent of the predicted maximal heart rate of subjects 45 to 50 years of age (Figure 6); during the run-walk sequences, heart rates of 145 to 150 were attained, approximating 85 per cent of maximal heart rate.

Monitoring the subjects. Heart rate with ECG telemetry or by counting of the pulse has provided valuable information regarding current fitness and the validity of the exercise prescription based upon the performance of the bicycle ergometry. Initially many ASHD subjects showed arrhythmias and ST-T displacement of great magnitude. These usually subsided during continued effort. The prophylactic use of nitroglycerin was encouraged in symptomatic subjects. Recently, electronic equipment has been developed which provides an auditory signal to the subject when he has exceeded a desired heart rate; accordingly he then can reduce the magnitude of his effort.

In addition to monitoring the heart rate, measurement of the blood pressure

may be particularly important in known hypertensive subjects, and in those subjects who show disproportionately high blood pressure responses to multi-level steady state exercise (exertional hypertension). Blood pressure as well as heart rate should be monitored, since both are important determinants of myocardial oxygen need. Similar elevations of blood pressure (250 to 300 mm Hg) have been found in the same subject during bicycle ergometer exercise and during running on the track, at which time the heart rate represents 80 to 85 per cent of his maximal heart rate.

In such subjects, these levels of exercise should be proscribed until medical (drug) therapy has been instituted and the blood pressure controlled.

Evaluation of Exercise Therapy. Time honored methods of evaluation of cardiovascular performance are valuable for normal and ASHD subjects. They include serial evaluations of the power and electrical functions of the circulation: submaximal or occasionally maximal exercise testing, measurement or estimation of the aerobic power, resting and exercise blood pressure, heart rate and blood pressure product (a measure of myocardial oxygen

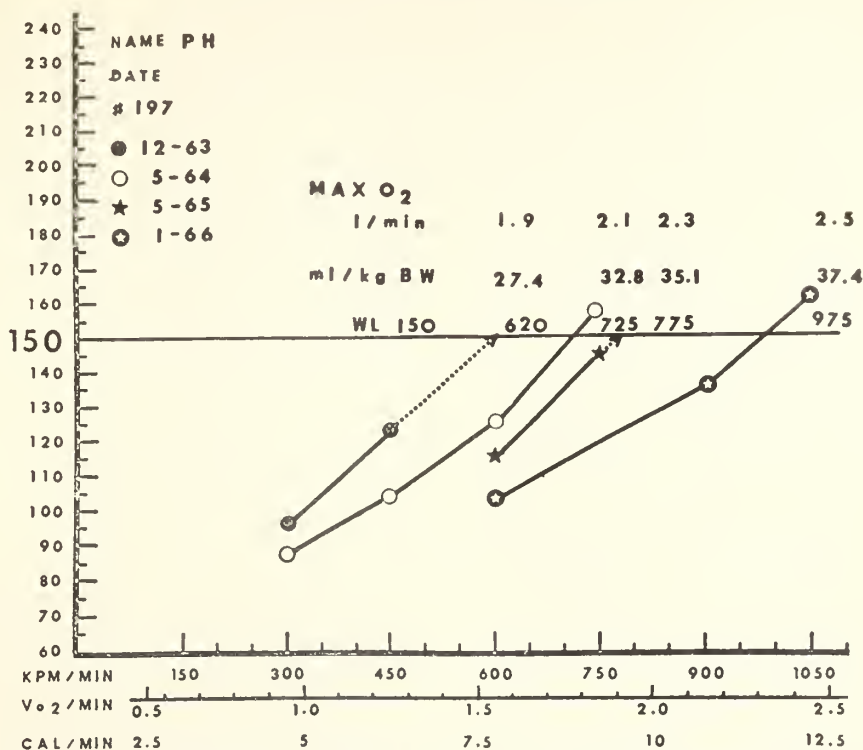


Figure 7. Representative example of response of an ASHD subject to physical conditioning. Striking improvement occurred in maximal oxygen uptake and heart rate. WL indicates work load in KPM/Min to produce a heart rate of 150. With training exercise ischemic ST-T changes subsided. (Not shown in this figure).

consumption) or tension time index; and exercise electrocardiogram (methods of Sheffield, et al, Bruce et al). In selected cases, other measurements are made: stroke volume, cardiac index, ventricular end diastolic pressure, dp/dt, coronary blood flow, lipid moiety (cholesterol, triglycerides, turnover) and more recently coronary arteriograms. A representative example of response of an ASHD to training is shown in Figure 7.

The similarity of the improvement in circulatory functions in ASHD and normals implies similar adaptations of the heart, of the periphery, (skeletal musculature), and of the nervous system (baroreceptors, reflexes).

In the past decade over a dozen investigators have demonstrated that selected ASHD subjects and most normal subjects benefit from enhanced physical fitness, with improved state of well being, en-

hanced cardiovascular function, lesser morbidity from coronary heart disease (less angina pectoris). As yet data are not available from controlled studies to determine the effects on mortality.

The major determinants of successful physical reconditioning include a comprehensive approach, adequate and enthusiastic staffing, motivation of the study subjects and substantial adherence, systematic and repeated evaluation and counselling, viable myocardium, and adequate arterial sources to enhance coronary circulation. In our experience, subjects with severe stenosis of three major coronary arteries have shown minimal or no response to training, and have been suitable candidates for surgical therapy.

Summary

Exercise therapy has a place for normal CP subjects and in coronary disease for rehabilitation and for secondary preven-

tion. From the clinical viewpoint, it appears that an active supervised conditioning program can be used safely in the treatment of selected patients with coronary heart disease, infarction, and angina pectoris but not in congestive heart failure.

Our experiences with supervised training of middle-aged NCP and coronary patients indicate that after training they were able to perform muscular work more efficiently than before training, i.e., with fewer heart beats, lower blood pressure, greater aerobic capacity, and lesser ischemic ST changes in the exercise electro-

cardiogram. Important determinants of successful reconditioning include adherence to the training program, viable myocardium, and an available source of blood supply.

Like all therapeutic measures, exercise prescription requires preliminary medical evaluation, exclusion of subjects with contraindications, evaluation of the cardiovascular status and function by testing, precise prescription of the magnitude frequency and duration of effort, supervision, direction and periodic reevaluation, all with the same care as the prescription of a potent drug.

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EXERCISE TESTING AND THERAPY IN ISCHEMIC HEART DISEASE

ALBERT A. KATTUS, M.D.*

The need for a quantitative method for evaluating the effects of therapeutic measures in angina pectoris has led us to the development of a treadmill test of exercise tolerance, the end point of which is the time at which the patient is stopped by moderately severe symptoms.

The test is carried out by having the patient walk on a motor-driven treadmill with a 10 per cent upgrade at progressively rapid speeds until he reaches the end point. A single transthoracic ECG lead is attached to the chest with the positive small disc electrode taped to the V5 position and the negative electrode taped to the opposite side of the chest at the RV6 position. The ECG machine is connected by direct cable coupling to a standard electrocardiographic recorder and a monitoring oscilloscope. The pattern is watched continuously on the scope and 10 second samples of tracing are recorded at the end of each minute of the test.

Prior to the test, the patient is instructed carefully in the method and the intent of the procedure. It is explained to him that we wish to reproduce an anginal episode and to learn something of how it behaves. Therefore, he is asked not to stop at the first sign of distress, but to continue walking during the mild stages of the angina until it builds up to a moderately severe level. In order to facilitate his estimation of the degree of distress being experienced, we ask the patient to grade the severity of his angina as 1+ for mild, 2+ for moderate, 3+ for moderately severe, and 4+ for most severe. We explain that we will not carry him to the 4+ level, but that he himself will set the stopping point when he indicates that the 3+ level has been reached.

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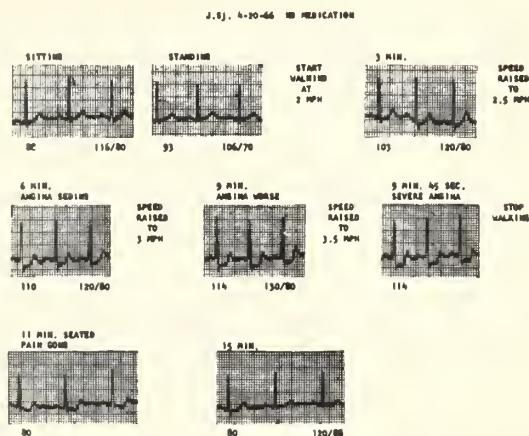


Figure 1. Treadmill tolerance test on a 66 year old man with mild angina (Reprinted from Kattus, A. A., et al, Reference 1).

The starting speed is selected on the basis of the patient's history of disability. Those with the most severe impairment are begun at 1 mph while those with lesser degrees of impairment are begun at 1.5 or 2 mph. The walking speed is increased by 0.5 mph every three minutes until completion of the 4 mph stage. A normal person is able to progress through the several stages of the test to the completion of the 4 mph stage without difficulty and without displacement of the ST segment of the electrocardiogram. Completion of the 4 mph stage of the test constitutes a near maximal effort since pulse rates of 160 to 180 are generated by this work load in most adult subjects. Patients with severe symptomatic angina will be stopped by symptoms before reaching the 3 mph stage of the test. Patients with mildly symptomatic angina will be able to reach or exceed the 3 mph stage. Some asymptomatic persons may display the classically ischemic horizontal depression of the ST segments while completing the test in the absence of anginal distress. These persons probably have significant obstructive disease in their coronary arteries which has

not yet reached the symptomatic stage. They are probably persons of very high risk for the development of overt coronary heart disease.

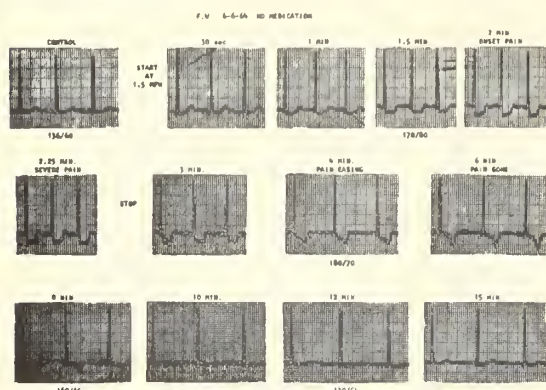


Figure 2. Treadmill test on a 58 year old man with disabling angina pectoris. (Reprinted from Kattus, A. A., et al, Reference 1).

Examples of typical treadmill exercise tolerance tests are illustrated in figures 1, 2, and 3. In the first, the subject had anginal pain only on rapid uphill walking. He was able to carry on his regular occupation as a university professor and he required only one or two nitroglycerine tablets per month. He was able to progress through three stages of the test, finally stopping with 3+ angina in stage 4 at the 3.5 mph level. The diagnosis of coronary insufficiency was established in stage 2 when the occurrence of anginal pain and ST segment depression clearly gave evidence of myocardial hypoxia. However, the additional walking up to the end-point of 3+ angina gave the quantitative data indicating the severity of the impairment.

In the second illustration, it is shown that the performance is poor with the patient failing to complete even the first (1.5 mph) stage of the test before stopping with 3+ angina and marked ST segment depression. This person was completely disabled by the disease and could not carry on his occupation as a shoe salesman. The typical post-exercise evolution of the ECG pattern is shown with deep T wave inversions finally resolving back to the original normal pattern.

A diagrammatic scheme for illustrating these tests is shown in Figure 3 in which each 3 minute walking stage is represented as a block with speed indicated by the

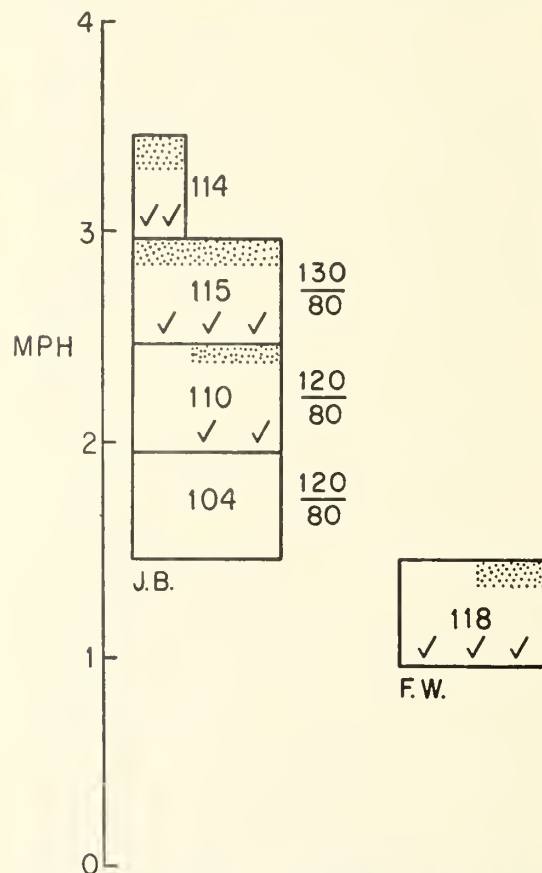


Figure 3. Graphic representation of treadmill tolerance tests. (Reprinted from Kattus, et al, Reference 2).

top of the block. The maximal pulse rate for the period is inside the block, the blood pressure outside. Check marks at the bottom of the block indicate the presence of ST segment depression while the shading with dots at the top indicates the presence of anginal pain. On the left is shown the good performance of the professor and on the right the poor performance of the shoe salesman.

Exercise tolerance tests of the type described may be used to follow the course of coronary artery disease, to test the effects of therapeutic interventions such as surgical revascularization, or to investigate the potency of anti-anginal drugs. We

have applied such testing to the specific study of exercise itself as a therapeutic measure in the management of coronary heart disease.

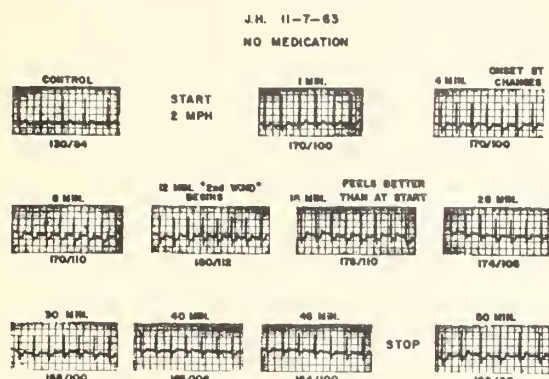


Figure 4. Treadmill test for adaptation showing walk-through phenomenon. (Reprinted from MacAlpin and Kattus, Reference 3 with permission of the American Heart Association).

We were led to the use of therapeutic exercise by the observation made on the treadmill that a number of patients have the ability to walk right through an episode of anginal pain. Such an episode is shown in Figure 4. This patient walked at a continuous speed of 2 mph at a 10 per cent upgrade. It had previously been shown in tolerance testing that anginal pain and ST segment depression would begin at this work level though the tolerance end point was at a higher level. During the prolonged 2 mph walk, the onset of pain and ST segment depression was noted at 4 minutes. The pain level never exceeded 2+ intensity, which was reached between 8 and 12 minutes. At 12 minutes the patient began to feel better and he commented that he felt as though he was experiencing "second wind." By 18 minutes he was having no pain at all and the ECG was beginning to improve. Over the next several minutes the ST segments returned to normal and the patient had walked through his anginal attack, both the pain and the ECG changes, without any change in the work load since walking was continued at 2 mph and 10 per cent

upgrade throughout. Obviously, some form of adaptation had taken place wherein the very exercise that had caused the anginal attack had also called forth the mechanism to correct it. On the strength of such reasoning, a group of angina patients has been treated with a regular walking program and followed at intervals.

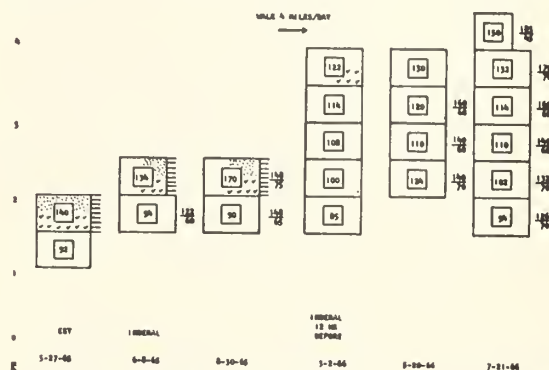


Figure 5. Serial treadmill tests on a 45 year old carpenter disabled by angina pectoris. Great improvement in exercise capacity is achieved by exercise training program. (Reprinted from Kattus, A. A., Ref. 4).

Figure 5 is an example of one of these subjects whose serial treadmill tests are shown. This man was a 45-year-old carpenter who was disabled by severe angina pectoris. The initial treadmill test disclosed a 2 mph exercise tolerance with 3+ angina, ST segment depression, and a supraventricular arrhythmia, as shown by the fringe on the diagram. Subsequent tests showed slightly improved capacity; one of these tests was aided by administration of the beta adrenergic blocking agent propranolol (Inderal). Over the next several months the patient undertook a walking exercise program in which he began with a 2 mile per day walk, gradually building up to 4 miles per day. By the end of the study, he could walk the 4 miles in 1 hour without having any pain or distress. Angina disappeared from his daily life and he returned to full time work as a construction carpenter. The serial treadmill tests show that he ultimately reached an exercise capacity of 4.5 mph, being

stopped by fatigue, not by angina. No ST depression or arrhythmia was present. Thus, complete resolution of symptomatic and ECG manifestations of his angina was achieved during his walking program.

This patient had coronary angiograms before and after his training program. Local stenotic lesions without complete occlusion were found in the right coronary and in the anterior descending branch. A year later, a repeated angiographic study revealed that the stenotic lesions were still there, although they showed somewhat less post-stenotic dilation than they had at the start. One cannot tell from such a study whether or not more blood could flow through the narrowed areas.

In several other patients we have seen evidence of improved collateral circulation after exercise training but in about half of those whom we have seen, the post-training studies do not show any changes at all, and in some they even appear worse in spite of the fact that significant improvement in exercise capacity may have been achieved.

The group of angina patients we have studied show that about 70 to 75 per cent are improved by exercise training consisting of walking every day. Among those who have walk-through capacity the improvement rate is 85 per cent. Thus, testing for the walk-through or adaptation capacity is useful in finding those patients who are likely to improve on a walking program.

Our practice is to have the patient walk on the level at about the speed at which

the angina appeared while walking on the treadmill at 10 per cent upgrade. Since our walking program is done on an unsupervised basis we believe that safety demands that the patient not try to walk through his angina during his every day walking. We tell him that if angina appears during his walk he is to pause and take nitroglycerine and then to continue. We believe that one half to one hour a day of walking is required to obtain an effect. The stop and go walking on the job or in the home does not appear to lead to a training effect as manifested by a slowing of the pulse for a specific level of work load. The policy in the walking program is to have the patient do what he comfortably can at first and then to extend the effort gradually to work toward an ultimate goal of a 4 mile walk done in 1 hour's time. Most of the patients do not reach this goal. They may experience great improvement on 2 or 3 mile a day walks, but those who get to the 4 mile a day level usually are completely rehabilitated.

We believe that if one could exercise his patients under supervision with ECG monitoring it would be possible to accelerate the program greatly. Whereas it now takes 6 months to a year to reach maximum benefit in the unsupervised program we would expect that the same could be done in 3 months if one could have the patient walk through his angina every day and perhaps go on to light jogging. These measures, which we believe to be unsafe for the nonsupervised program, could be done if medical help and resuscitative equipment were on hand in case of emergency.

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EXERCISE RESPONSES IN PATIENTS WITH HEART FAILURE OR VALVULAR OR CONGENITAL HEART DISEASE

ELLIOT RAPAPORT, M.D.*

Once one eliminates the large group of patients with coronary heart disease discussed earlier by Dr. Hellerstein and Dr. Kattus, there are little published data on the effects of exercise programs on other types of cardiac patients, i.e. patients with heart failure or valvular or congenital heart disease. In such patients, one tries to anticipate the physiologic or pathophysiologic responses of these cardiac patients to acute exercise. This information, combined with experienced clinical judgment, forms the basis of a prudent exercise program for such patients.

The problem is well illustrated by the patient with congestive heart failure. It is important, initially, to distinguish between the patient who is in actual cardiac decompensation from one who has recovered from a previous bout of heart failure resulting from such drugs as digitalis and diuretics. The role of exercise is obviously different in these two situations.

I believe that, regardless of etiology, there is no role for exercise during the stage of acute cardiac decompensation. On the contrary, there is a distinct role for rest in such a patient. Physical activity should be adjusted to the degree necessary to prevent the onerous complications that may accompany an absolute bed rest program, that is, hypostatic pneumonia, fecal

impaction, thromboembolic complications and so forth. Aside from the wealth of clinical experience, which has accumulated over many decades, on the treatment of such patients with rest reliable pathophysiologic data also make one reason that exercise is undesirable in this situation. This relates to our understanding of a cardinal principle in the management of congestive heart failure, namely to minimize myocardial oxygen demands.

Two of the major determinants of myocardial oxygen consumption are the amount of tension being developed by the left ventricular myocardium and the heart rate. One can state from the Laplace law that, for any given level of intraventricular pressure, the greater the heart size the greater the tension within the walls of the myocardium and thus myocardial oxygen consumption. Data from our laboratory¹ reveal that mild to moderate exercise increases ventricular volume in patients in heart failure in contrast to subjects without heart disease in whom ventricular volume remains unchanged.

Similarly, the heart rate response in a patient with heart failure is also excessive for the level of exercise being performed compared to the compensated subject. Consequently, there are more seconds of each minute spent developing isovolumetric contractions, which is also costly in relationship to the oxygen needs of the heart. It is clear from these types of evidence that it is undesirable for the patient with heart failure to exercise during the several weeks required for restoration of cardiac competency; there is no role for any real exercise program during this period.

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The type of rest program that should be carried out during the decompensated phase of heart failure is of some interest. Should one keep the patient on absolute bed rest or can one accomplish the same results by allowing him to sit by the bedside? Again we have some data from our laboratory that bears on this.² In the normal subject stroke volume drops significantly on the assumption of an upright position. This is an effect that would be unwanted in a patient with heart failure who already exhibits less cardiac and stroke output than that needed for the metabolic demands of the tissues. Similarly, heart rate increases in the normal subject on assuming the upright position, presumably because of a baroreceptor response to the decrease in stroke volume; this also would be an unwanted occurrence in the heart failure patient. Interestingly, actual measurements in heart failure subjects fail to reveal these effects, presumably because there is resistance to dependent pooling of blood on assumption of the upright position resulting from an increase in venomotor tone, an increase in blood volume and the increase in tissue pressure exerted against the veins from edema fluid. End-diastolic volume doesn't change and, consequently, neither does stroke volume nor pulse rate. Hemodynamically, there appears to be little difference between the recumbent and the upright positions in the patient with heart failure. Therefore, a program emphasizing sitting by the bedside would seem to be advantageous since it lessens the threat of complications seen in patients placed on absolute bed rest for prolonged periods of time.

The question of an exercise program becomes a little more knotty when applied to the patient who has recovered from heart failure, has had a suitable convalescence, and has gradually resumed some activity at home. There is a tendency among many physicians to overly restrict the activities of such patients, particular-

ly in terms of neglecting rehabilitation toward the resumption of reasonable occupational activities. I believe one can judge clinically quite well the level of activity which a patient can undertake. Additionally, one can utilize work evaluation testing as a supplement in determining the exercise load the patient can tolerate without becoming unduly symptomatic, and in prescribing a work program for him that matches that degree of activity. If one routinely relegates the patient with heart failure to a life of inactivity in his living room, the inactivity may worsen the situation by physically deconditioning him as well as by being bad psychologically. If one sees a patient after a year or two of this type of existence, he should consider a program of limited physical reconditioning. The exact role is still to be defined, but it would seem logical to explore, once the patient with heart failure is really deconditioned under this type of improper management, the extent to which physical reconditioning can be helpful.

There are two causes of heart failure which require special comment as far as limitation of activities is concerned. The first of these is pulmonary heart disease. Although patients with this disorder may have pulmonary artery pressures near systemic levels when they are decompensated and in respiratory acidosis, they often have pulmonary circulatory pressures which have returned into the high normal range with restoration of competency. Nevertheless, I have yet to see such a patient with normal pulmonary artery pressures at rest whose pressures fail to rise dramatically with the stress of moderate exercise on the catheterization table. This suggests that exercise should be limited in this group of patients. An additional relative contraindication to exercise relates to the fact that the majority of these patients have chronic obstructive pulmonary emphysema as the basic etiology. Much of the actual increase in cardiac output that would develop as a result of exercise may

go to feed the increased cost of breathing associated with augmented ventilation in the presence of obstructive airway disease. I believe that such patients with pulmonary heart disease really should restrict themselves to activities that don't result in significant symptoms such as dyspnea and excessive fatigue.

The other special problem is the patient with primary myocardial disease. Burch and associates³ have suggested a treatment program of prolonged bed rest up to a year for some patients with the laudable goal of returning the heart size to normal. My own view is that this is often an impractical objective and prolonged bed rest is undesirable as a blanket policy for this whole group of miscellaneous conditions. In some patients tachycardia is disproportionate to the rest of the clinical picture even after they have seemingly recovered from cardiac decompensation. One may see resting heart rates of 100-110 beats per minute that may remain unchanged for weeks or even months. These patients should be managed with a relatively prolonged period of bed rest, at least until the heart rate comes down into the normal range. However, aside from this group of patients I believe it is impractical to keep patients with primary myocardial disease arbitrarily on bed rest for a year or so.

Advice on the degree of activity desirable in patients with valvular heart disease depends on three general factors. First, and perhaps most important, is the severity of the mechanical obstruction. This requires knowledge of the hemodynamic status of the patient. What one advises a patient with mild mitral stenosis is entirely different from what one recommends to a Class IV cardiac patient with very tight mitral stenosis. Secondly, the level of permissible exercise depends on the status of the pulmonary circulation, specifically, on the degree of pulmonary vascular disease and the resultant pulmonary hypertension. Finally, as noted ear-

lier, the advisability of exercise is dependent on the presence of a competent ventricle behind the obstructive lesion.

I am particularly apprehensive about patients with aortic stenosis undertaking strenuous exertion. Sudden death, presumably from ventricular fibrillation, is not an unusual occurrence under these circumstances. Even patients with relatively mild congenital aortic stenosis should be restricted from participating in competitive sports. If aortic stenosis is sufficiently mild to not warrant surgical intervention, a patient can generally lead a normal active existence. However, there is no place for an exercise program as a therapeutic modality in such patients.

The situation in the case of a patient with mitral stenosis is somewhat different. It is intriguing to speculate on the value of a program of physical reconditioning in a patient with a mild mitral stenosis for whom surgery seems premature. Effective physical conditioning should result in a lower resting heart rate and less of a rise for any given increment of work compared to unconditioned patients. Bradycardia is associated with a longer diastolic-filling period than is seen with higher heart rates; the number of diastolic seconds per minute available for atrioventricular valve flow increases as the heart rate decreases. Examination of the Gorlin formula in a patient with mitral stenosis reveals that for a given orifice area and cardiac output, the gradient of pressure necessary to propel flow across the stenotic valve will be less as the diastolic filling period increases. Stated alternatively, it would appear that as mitral stenosis worsens, the resultant diastolic pressure gradient for any given cardiac output would be less in a conditioned patient with relative bradycardia than it would be otherwise.

Assuming that most patients with mitral stenosis are poorly conditioned like the general population, it is intriguing to think that one might be able to postpone

surgery for a longer period of time in patients with gradually advancing mitral stenosis by lowering the pressure gradient and, therefore, the left atrial and pulmonary capillary pressures through a physical reconditioning program early in the course of the disease. This is speculative but it would seem to be a worthwhile area to investigate further.

There is equally little knowledge on the effects of an exercise program in patients with congenital heart disease. Even studies on the effects of acute exercise performed on the catheterization table must be interpreted cautiously because measurements of pulmonary blood flow by the Fick principle are grossly inaccurate in the presence of a large pulmonary blood flow. Nevertheless, looking through some of the cases we have studied in our own laboratory, I am impressed that in patients with atrial and ventricular septal defects with large left to right shunts and essentially normal pulmonary circulatory pressures the left to right shunt does not increase with exercise. The shunt usually remains nearly the same or even

decreases. Consequently, there is no evidence to suggest that moderate exercise aggravates acutely the circulatory status of such patients. If, for some reason, surgery is postponed or not performed in these patients, we permit full and unrestricted activity without any limitations in relation to exercise unless distinct cardiorespiratory complaints develop with the level of exercise being performed. In contrast, however, exercise appears to be a limiting factor in patients with pulmonary vascular disease and resultant pulmonary hypertension. In patients with cyanotic congenital heart disease cyanosis inevitably worsens with exercise as the right to left shunt increases in association with the decrease in systemic vascular resistance. As a result, systemic hypoxemia increases and exercise tolerance is correspondingly limited.

It is clear from this discussion that our knowledge in this area of cardiology is limited and that there is room for a great deal of research on the effects of physical reconditioning and exercise in patients with organic heart disease.

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Exercise And Rehabilitation

ROLE OF THE NURSE IN REHABILITATION OF THE MYOCARDIAL INFARCTION PATIENT

JOSEPH E. ACKER, JR., M.D.*

Our study in 1966 in two community hospitals in Knoxville, Tennessee, of 132 patients treated in Coronary Care Units for myocardial infarction revealed that 80% returned to some type of job. Of

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1350 myocardial infarction patients, 92½% returned to employment in Seattle. Careful appraisal of cases for rehabilitation failure indicates that about half of these (10% of total with jobs to return to) might have been favorably influenced by "rehabilitation oriented" hospital care.

Nurses have assumed a new, active role in Coronary Care Units (CCU) but are

Table I

Level of Activity	Calorie Cost/Minute	Daily Living Activities	Calories Cost/Minute
I		May turn self	1.0
Complete bed rest	1.0	Watch TV & Radio	
II		Complete bath	
Complete bed rest	1.0	May be shaved	
III		Feed self	
Complete bed rest	1.0	Lift onto bedside commode (BC)	3.6
IV		or bed pan (BP)	4.7
Dangle feet		Specify BC or BP	
5 min. t.i.d.	1.6	Read newspaper	
V		Wash own face and hands	2.5
Dangle feet		Have complete bed bath	1.0
10 min. t.i.d.	1.6	Brush teeth	
VI		Shave self	2.5
In bedside chair 10 min. t.i.d.	1.6	Comb hair	
VII		Make up face	
Up in chair		Up on bedside commode	
15 min. q.i.d.	1.6	Same	
VIII		Same	
Up in chair		Do partial bath	2.5
15 min. q.i.d.	1.6	Progressive bath	2.5
IX		BRP if adjoining bath	
Walk 1 to 2 min. each time up	2.3	if not BR wheelchair	
X		Self care	
Up pm		Dressing and undressing	2.3

not often "rehabilitation oriented." Continuity of care is also often lacking; the patient is mentally unprepared for the move from coronary care units to routine floor care, to home, and to work.

Continuity of care has been assured by the establishment of a Cardiac Rehabilitation Unit (CRU) at St. Mary's Memorial Hospital on a trial basis with plans to expand this concept to our other three general hospitals. The nurse plays a key role in this operation. Special courses on rehabilitation principles and practice have been offered. Cardiopulmonary resuscitation courses complete with D. C. defibrillation principles and practice have already resulted in successful recovery in 3 or 4 cardiac arrests which occurred in CRU. Nurses are taking Coronary Care Nurses Training Courses and will be available to work in the CCU, also.

The CRU nurse visits the CCU daily, to acquaint herself with the patient, and helps prepare him for the next step up-

ward. The initial Activity Level (See Table I) begun in CCU is continued. The patient is given American Heart Association reading material after transfer to CRU. Regular group structured discussion sessions are held. At an appropriate time the patient begins taking his own medicine, progresses through self care to active ambulation, and will receive activity, diet, and anticoagulant instructions. Detailed discharge instructions including the specific appointment with his family physician are given on the final day.

This structured plan of care has received enthusiastic support from nurses and patients. Though in its early stage (opened December 19, 1968) more attention to exercise and rehabilitation principles by the family physician is evident. We feel that the CRU affords a potential way to increase by 10% successful rehabilitation of the CCU patients whose mortality rate has been previously reduced by 10-15% by the institution of the CCU.

THE USE OF EXERCISE IN THE REHABILITATION OF PATIENTS AFTER MYOCARDIAL INFARCTION

NANETTE K. WENGER, M.D.*

About one patient with myocardial infarction is admitted to the Grady Memorial Hospital each day. The majority of these patients have limited resources in terms of education, training and income. It has been our purpose to apply the principles of a broad full-scale rehabilitation program to these cardiac patients. Prior rehabilitation efforts for cardiac patients have been directed at a higher socioeconomic stratum, wherein the patients were assumed to have greater resources and incentive.

The Cardiac Rehabilitation Program in-

cludes diagnostic facilities, medical and nursing care, cardiac surgery, dietetic and social counselling, cardiac conditioning, cardiac function testing, and vocational counselling in preparation for return to work. It is the purpose of this report to describe one phase of the total Cardiac Rehabilitation Program, Cardiac Conditioning after Acute Myocardial Infarction. This is an early intervention program which includes an acute in-patient phase and a convalescent out-patient phase, and which emphasizes a team approach involving the specialized skills of many health care disciplines. Application of the principles of rehabilitation to patients with myocardial infarction has a relatively short history. Formerly, patients conva-

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lescing from an acute myocardial infarction did so in an atmosphere of fear of even minimal exertion. The normal psychological progression of reaction to a "heart attack," i.e. denial, dependence and depression were handled so as to perpetuate the dependence. Patient questions regarding return to work were sidestepped both by physician and nursing teams.

Recently, many factors have forced a new look at the total care of a patient with an acute myocardial infarction. The economics of hospital care have dictated shorter overall hospitalization. Lack of hospital beds, shortage of trained personnel, and an understanding of the physiologic changes associated with bed rest and inactivity have contributed to new modes of therapy for the patient with an acute myocardial infarction.

Patients admitted to Grady Memorial Hospital with an acute myocardial infarction are referred to the Cardiac Rehabilitation Team by the ward physician, as soon as the severe pain, shock, or congestive heart failure have been treated successfully. The patient is interviewed by the Cardiac Rehabilitation Team and the program is described. This early contact with the patient helps to alleviate anxiety by proposing that he start on the first step leading back to health. Thus, Cardiac Conditioning generally begins within the first few days after admission to the hospital, while the patient is still in the coronary care unit. This in-patient program is designed with 14 steps of gradually increasing activity in three areas: passive and active exercises, activities of daily living, and recreational therapy (See Table 1 in Appendix 4). The 14 steps of activity are graded according to work level, as estimated by oxygen consumption. The inpatient Cardiac Conditioning program is individually adjusted to the medical requirements of each patient, in that the ward physician gives permission for his patient to progress from one step to

the next. The occupational therapist directs the activity steps, carefully noting any symptoms and checking the pulse rate, respiration, or blood pressure as needed. Initially, the work level is minimal; the activities require few calories of energy expenditure, but tremendously reduce the patient's anxiety, enabling him to rest more completely than if he did no work and remained agitated. Exercises at first are passive, with the therapist performing the work of moving the extremities through their full range of motion. These are followed by active, then resistive exercise.

Ideally, the patient will reach the 14th step of activity by the time he is ready to be discharged from the hospital. This approximates the level of work required for the usual activities of daily living at home. Additionally, both the physician and the patient know the actual level of activity that has been safely accomplished under medical supervision. The Public Health Nurse is an important "bridge" between hospital and home care. She visits in the home and reviews with the patient and family the prescription for physical activity and exercise at home, as well as medication and diet instructions. She makes a home visit 1 to 2 weeks following discharge from the hospital, supervises an exercise session, re-enforces the doctor's orders, and encourages the patient to return for follow-up to the Cardiac Out-patient Clinic.

When the patient returns to the Cardiac Out-Patient Clinic for the first time, about 3 weeks after discharge from the hospital, a complete medical examination is performed; an electrocardiogram, a treadmill exercise test, and other laboratory studies are done to evaluate his progress at home. He is then enrolled in the Out-patient Cardiac Conditioning Exercise Program.

The patient returns to the hospital outpatient department 2 or 3 times a week for 30-40 minute sessions of Cardiac Con-

ditioning exercises. Activity levels are individually prescribed by the cardiologist for each patient, dependent on his response to the treadmill exercise test which was designed to reach maximal exercise. The actual cardiac conditioning exercises are supervised by a physical therapist as an instructor.

The format of the out-patient exercise program (See Table 2 in Appendix 4). consists of a short period of warm-up exercises, followed by walking measured distances at a brisk pace, then running in place for a specified time and finally a "cooling down period." The number of warm-up exercises, the time and distance of walking, and time of running in place, is determined by pulse rates taken before, during and after exercise; the desired pulse rate is indicated on the exercise prescription, based on the prior maximal treadmill exercise test. More difficult and demanding exercises are introduced by the physical therapist by two methods: 1) decreasing the time needed to perform the same number of warm-up exercises or the same distance of walking and 2) increasing the period of time of running in place. The program is designed to involve no apparatus or equipment in keeping with the limited economic resources of our patients.

The patient is also instructed in performing his exercises at home on the days he does not attend exercise classes at the hospital. As he advances, each patient is retested on the treadmill to document his progress, to prescribe additional exercises, and to make a recommendation regarding return to work. The total length of the out-patient program is variable, but averages 6-8 weeks. If the patient's former occupation is no

longer feasible, psychologic testing, vocational counselling and job retraining are available. An "advanced" group of patients are involved in a more rigorous protocol of physical conditioning within several months after their myocardial infarction (See Table 3 in Appendix 4).

It must be emphasized that any benefits can not be ascribed solely to the exercise program; they accrue from the total constellation of patient care associated with the rehabilitation program. Care is taken to encourage our patients to follow their prescribed diets, to lose weight, and to stop smoking.

Over the past two years, we have been impressed that carefully supervised exercise, at gradually increasing levels of activity, has provided both physical and psychologic benefits in returning patients to normal living after a myocardial infarction. Furthermore, this program has proven to be feasible among the low-economic group of patients attending a large city hospital. It has considerably influenced the attitude of many members of the health care team, and many students in these disciplines, regarding the rehabilitation of the myocardial infarction patient. Whether this rehabilitation effort has resulted in increased working capacity for the patient or has actually affected longevity remains to be determined. As of May, 1969, 436 patients had been through the in-patient phase of this program and 125 through the out-patient phase, all completely without incident during or immediately after the cardiac conditioning exercises. Cardiac conditioning is a simple, safe, and effective component of our rehabilitation effort for patients with myocardial infarction.

WORK EVALUATION UNITS AS A RESOURCE IN EXERCISE PROGRAMS

ROBERT M. LEVENSON, M.D.*

Work Evaluation Units are composed of cardiologists, psychiatrists, vocation counsellors, and social workers. Their goal has been, by means of a multi-discipline approach, the evaluation of an individual with heart disease to determine the nature of the problems that prevent him from working, and also to offer appropriate suggestions that will enable the individual and his doctor to proceed more readily toward rehabilitation. These units generally have been sponsored by affiliate Heart Associations.

In their early experience, it was quickly evident that the clinical evaluation by the cardiologist had limitations in terms of establishing an individual's functional classification. In general, physicians are disease oriented rather than function oriented and many are not equipped to make an adequate evaluation. It was also quickly determined that the use of some kind of an exercise procedure would enable the cardiologist member of the team to offer a more precise evaluation of function, which was necessary in order to make appropriate kinds of work recommendation. Many test procedures have been used, including steps, the bicycle, and the treadmill. Probably, the acceptance of the Work Evaluation Units by the community has reflected recognition by the physicians that this kind of testing procedure offered something that they were not able to offer in their own office. In general, most patients referred to the units are exercised.

Exercise testing has offered a number of benefits. First, of course, it offers a

better evaluation of the individual's functional capacity than could be obtained by the usual clinical history. Secondly, it offers a means of evaluating symptoms. Some symptoms of which a patient may complain may not be of cardiac origin and he may be restricted by them. It is difficult to make this assessment by history alone, and thus the test has had a special benefit here, by developing these under direct observation. Thirdly, as a side benefit, it has been observed repeatedly that having exercised under observation, and finding that no problems arise the patients will become more confident of their ability to perform and were willingly, thereafter, increasing their own activity level.

Finally, exercise testing has provided documentation of the limits of a clinical evaluation and of the special benefits to be obtained by the use of an exercise test.

Presently, there are 38 Work Evaluation Units active throughout the United States and two units are just under way. In addition to their local activities which are concerned with training and educational programs, there are a number of national activities. In 1954, 1960 and 1966 National Conferences were held by those involved with the Work Evaluation Units, and those interested in the problem of cardiac workers. As a consequence of the 1960 meeting at the Arden House in New York, a Sub-Committee on Work Evaluation Units of the Rehabilitation Committee of the American Heart Association was formed and this has been an on-going activity. Some of the activities of the Sub-Committee have had to do with the preparation of standard forms and consideration of data collection by all of the units, a consultation service to the units and to areas in which Work Evalua-

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WORK EVALUATION UNITS

tion Units were being considered. Special studies have been conducted, such as a co-operative study for the Bureau of Hearing and Appeals of the Social Security Department, a study of exercise tests, and an evaluation of the cardiac drivers. A regular newsletter has been a part of the committee action as have meetings prior to the Scientific Session of the American Heart Association. It is presently planned that some regional meetings will be held.

The initial charge to the Units has been to determine: 1) whether cardiacs can work, 2) what problems will occur that may prevent them from returning to work. It was also to determine the problems that would occur if they did resume work. In general, these questions have been answered in the most part, though there are still psycho-social and vocational considerations that need further study. This is not to say that the Units have completely completed their role, since there is a need for them to continue to remind the interested groups, notably the medical, social, insurance, vocational groups, as well as the public, of the fact that cardiacs can work, and to educate new individuals as they come along, and the material that has been

gained by the Units. There is, of course, a need for the Units to consider new directions and a solution of new problems. This was pointed out in the recent editorial in *Circulation*, by Dr. Helmuth.

It should be recalled that by experience the Unit personnel have generally become knowledgeable in exercise testing as it applies to evaluation of individuals and for rehabilitation purposes. Also the Units represent existing facilities and interested personnel who properly should become involved in community activities which involve evaluation and conditioning of those patients with heart disease. Some of the Units are already so committed.

It is recognized that all of the Units do not function in the same manner—that some are seeing relatively few patients and not meeting on a regular basis. The Sub-Committee hopes that by its national and regional meetings, and other activities that the Units, overall, can be upgraded. The Sub-Committee would invite consideration of the use of the Work Evaluation Units as community resources to be included in the planning for any kind of conditioning programs involving individuals with heart disease.

WORKSHOP REPORTS

I. EXERCISE AND PERFORMANCE EVALUATION WORKSHOP REPORT

The first item of discussion was to enumerate reasons for doing performance evaluations. It was recognized that performance evaluation involved some expertise and, in addition, some rather costly equipment. Some may also consider that performance evaluation is too time consuming in terms of the information gained. In establishing a rationale for performance evaluation, the following question was considered: What kind of clinical information can be obtained by exercise testing?

It would appear that one of the major benefits of exercise testing is the identification of pre-clinical heart diseases. Conditions that are undetected as the result of a resting evaluation may become apparent when the subject and his cardiovascular system are placed under the greater stress of an exercise test. The exercise test may also be helpful in identifying abnormal ECG responses (see workshop II) in the clarification of atypical chest pain. Performance evaluation by means of exercise testing is perhaps the most valid and reliable method of ascertaining a subject's physical fitness. An accurate determination of physical fitness has important ramifications relative to the prescription of exercise and determining whether a given occupational task lies within the subject's capacity. Exercise testing may also be useful to ascertain and study increments and decrements in the performance capacity of cardiac patients.

Other important considerations in the

area of exercise and performance evaluation are: what are the caloric costs of the various types of activities? How may this information be utilized in terms of gauging the strenuousness of activity and in terms of prescription guidelines? The caloric costs of various types of physical activity vary widely, within individuals, between individuals, and between groups of individuals. Published tables of caloric costs are for general use and do not necessarily apply to given tasks performed by a specific patient (see page 8). If more precise information relative to the caloric cost of a specific activity is required for a given patient, a laboratory evaluation may be necessary to determine energy expenditure accurately. Since there is a linear relationship between oxygen intake and heart rate (at least in normal subjects, over the heart rate range 50-90% of aerobic power) the criterion of heart rate can perhaps be utilized to gauge the strenuousness of activity. Heart rate is easy to measure and is an adequate criterion of physiological strain under many conditions. Exercise heart rate may be utilized to set activity limits for patients. One possible application of this principle in terms of prescribing exercise limits follows: If a patient exhibits no adverse reactions to an exercise load eliciting a heart rate of 160 beats per minute, the physician might prescribe an upper heart rate limit of 160, or perhaps slightly less provided the patient is taught to determine accurately his own heart rate.

A summary of the uses of exercise tests is presented below.

Table 1
Uses of Exercise Tests
(courtesy R. J. Shephard)

1. Assessment of Fitness
 - Industry
 - Sport
 - Active leisure pastimes
 - Exercise prescriptions
2. Objective cardio-respiratory evaluation
 - Symptoms—e.g. dyspnoea
 - Signs—e.g. myocardial "enlargement"
3. Specific evaluation of heart
 - Probability of myocardial disease
 - Prognosis of cardiac disease or injury
4. Control of exercise regimens
 - Prevention
 - Rehabilitation
5. Control of other forms of therapy
6. Patient motivation

Exercise Testing

There are several possible methods that may be employed for exercise testing. Several different types of equipment may be used in the evaluation; for example, a treadmill, step, or bicycle ergometer may be utilized. The exercise test may be a maximum test of the subject's aerobic power or it may be submaximal. The test may be a single stage application of some predetermined work load or several increasing work loads may be presented in stages.

It was concluded that in view of the additional information gained from maximum testing, a maximum test should be employed whenever possible to do so. It was recognized, however, that the risk of maximum exercise is somewhat greater than for sub-maximum and that it may not always be feasible to conduct a maximum test because of limitations of time and equipment or personnel. Because of these possible limitations it was recommended that patients should be exercised to predetermined heart rates in order to assess their ability to withstand exercise stress. Target heart rates corresponding to 85% of maximum aerobic power for the various age groups are as follows: As stated earlier, a patient could be exer-

Table 2
Target Heart Rates

20-29	170 beats per minute
30-39	160 beats per minute
40-49	150 beats per minute
50-59	140 beats per minute

cised to the target heart rate for his age group, and if he remained asymptomatic, then be cleared for exercise to the heart rate intensity which corresponds to 85% of maximum effort. It was recommended that the target heart rates be achieved via standardized test procedures using any of the three test modes: treadmill, step ergometer, or bicycle ergometer. (Appendix 1) The decision to select a given test mode or test procedure will of course be dependent upon personal preference and/or local circumstances. Several factors must be considered in making these selections. A table making certain comparisons between the step and bicycle ergometer is presented.

Table 3
Comparison of Step Ergometer and Bicycle Ergometer
(Courtesy R. J. Shepard)

Step	Bicycle
Familiar	Less familiar
Cheap	\$300 to \$3,000
No calibration	Calibration needed
Ancillary	Ancillary
Measurements difficult	Measurements easy
Looks simple	Looks impressive
Local fatigue	Local fatigue
Unlikely	Likely
Easy to lie down	Difficult to dismount

Additional discussion relative to test mode and test method can be found elsewhere in the conference proceedings in papers by McDonough and Bruce, Buskirk, Sheffield, Naughton, and Blomqvist. In summary, the following advantages and disadvantages related to various test methods were enumerated. In comparing the maximal and submaximal exercise tests, it was concluded that the greatest advantage of the maximal test was that it afforded greater definition of a patient's cardiovascular status. The submaximal test, while providing less information relative

to the patient's status, has the advantage of being less costly in terms of time, equipment, and personnel. The submaximal test also presents less risk for the patient. The advantages of the single and multi-stage exercise test were considered also. The single stage test requires less time for administration and therefore, more patients can be tested in a single testing session. The multi-stage test permits evaluation of heart rate and electrocardiographic responses to more than one work load and may thus permit a better estimate of maximal performance; it is also safer, in the sense that the patient's response to moderate exercise is seen before proceeding to more vigorous work. An example of a multi-stage test is presented in the paper by McDonough (Workshop II).

Precautionary Measures in Exercise Testing

The problem of the hazards of testing were considered and measures that can be applied to minimize their occurrence or, when present, to recognize and manage them were discussed. It was recognized that exercise stress testing can precipitate complications that may be serious and threaten life. Fortunately, such extreme emergencies are relatively uncommon and can nearly always be corrected by prompt resuscitation. In view of the potential dangers, suitable resuscitation devices, including a defibrillator and oxygen, should be available during testing; laboratory personnel should also be trained in their use. The characteristics of a population of patients for which exercise testing might be desirable were discussed. Contraindications to testing were also mentioned. It was recognized that greater care must be taken in testing persons 35 and over. Otherwise, testing would be permissible for all healthy individuals. Testing would however, be contraindicated for the following types of cases: acute cardiovascular disease; severe impairment of the nervous system, respiratory system, hepatic

system, or musculo-skeletal system. In many cases, disease severe enough to contraindicate exercise testing would be severe enough that the patient would not be ambulatory.

During an exercise test the patient must be observed carefully for evidence which would indicate a need to end the test. The various signs, symptoms, and ECG responses that might warrant the stopping of the test that were discussed are summarized in the following table:

Table 4
Criteria For Ending Exercise Tests

- A. Excessive fatigue
- B. Ventricular tachycardia and certain other arrhythmias
- C. Ataxia
- D. Angina or severe dyspnea
- E. Abnormal exercise ECG

In the absence of any of the above indications, attainments of the target heart rate or the subject's maximum oxygen intake would also warrant stopping the exercise test.

There are other questions related to the hazards of testing: what are the relative merits or demerits of testing by a clinician as opposed to mass testing by paramedical staff? Is it mandatory that a physician be present during the testing session? There was a general agreement on the following recommendations: (A) The use of paramedical personnel to conduct mass screening tests may have considerable value. This resource has been largely untapped. (B) A physician should be present whenever possible during the testing of patients with known or potential cardiac disease. (C) Trained paramedical personnel may test other individuals, but should be trained in cardiopulmonary resuscitation techniques including the use of a defibrillator, administration of oxygen, airway, and closed chest heart massage. The advisability of having a physician present during exercise testing is summarized in the following table.

EXERCISE AND PERFORMANCE

Table 5
Physician Presence During Exercise Testing (Courtesy J. R. McDonough)

Age	Healthy		Cardiac (Definite or Probable)	
	Submaximal	Maximal	Maximal	Submaximal
Under 35 years	•	•	••	••
Over 35 years	•	••	••	••

*Physician presence not necessary, although overall supervision is desirable.

**Physician should be present during testing.

Chairman, Steven N. Blair, P.E.D.
Moderator, John McDonough, M.D.
Consultant, Elsworth Buskirk, Ph.D.
Consultant, R. J. Shephard, M.D., Ph.D.
Consultant, Henry L. Taylor, Ph.D.
Recorder, Paul Neff

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II. EXERCISE AND STRESS TESTING WORKSHOP REPORT

Application of the electrocardiographically monitored exercise stress tests is frequently of value in the following circumstances:

1. To strengthen or confirm a clinical impression of angina pectoris.
2. To assist in the differential diagnosis of chest discomfort or pain.
3. To detect subclinical coronary artery disease or myocardial ischemia due to other causes.
4. To help predict risk of disabling manifestations of coronary artery disease especially in those whose activities could endanger others.
5. To test the function of the heart and circulation.
6. To assess fitness for employment insurance or compensation and to determine exercise capacity in normals and in those with known heart disease, especially of the the ischemic type.
7. To elucidate mechanisms and manifestations of cardiac disease and therapy.

8. To investigate the natural history of cardiac disease and the effects of therapy or change in life habits.

9. To help in the management and motivation of subjects.

The following factors are considered to influence the ECG response to exercise.

1. *Age*—More abnormal responses are seen in the older age group and few such changes are seen, even at high levels of exertion, in men under age 35 years.

2. *Sex*—Lack of adequate experience and follow up studies in the small group of young women previously tested provide an insufficient basis at present for the interpretation of abnormal ECG changes seen in this age-sex group. There is some evidence that ischemic changes in both the resting and exercise ECG in this group are less likely to indicate overt or latent coronary artery disease but may represent subendocardial ischemia from other causes.

3. *Physical characteristics*—Chest con-

figuration, blood pressure, obesity, and hyperlipidemia are some of the factors that may influence the response.

4. *Habits*—There is insufficient data about differences in personal habits, and the action of some drugs to make reliable statements about their effects on the stress ECG.

5. *Instrumentation*—The performance of available types of equipment and commercial designs does not fulfill the criteria established by the expert committee of the American Heart Association, particularly in regard to low frequency response. In the near future improved instrumentation will be available. Electrocardiographic equipment now in use should be frequently checked for frequency response, decay rate, stylus pressure, time constant, etc. which can be done with inexpensive, simple techniques. Useful information can be obtained by presently available, reasonably priced commercial equipment which is well maintained, even though it falls short of desirable specifications. There is improved measurement with magnetic tape recording and electronic communication and data processing techniques under advanced but at present incomplete development. Present "hard wire" techniques have reduced the need for radio-telemetry in most testing situations.

6. *Lead Systems*—Recent interest in ECG monitoring during a variety of activities, including exercise testing at maximal or submaximal levels, has led to the development and promotion of a large number of bipolar ECG chest lead configurations. Placement of the "positive" electrode at the V_5 position has found wide acceptance for the routine evaluation of ST-T changes. Numerous sites have been proposed for location of the "negative" electrode, e.g. in the right subscapular or right infraclavicular region, on the forehead V_5 right or on the manubrium. Differences in overall performance (such as

in sensitivity and specificity) between these leads appear to be relatively minor.

The Double Master's Two Step Test calls for recording of conventional extremity and chest leads. Changes in posture and delay in time are some of the problems applicable to the use of the step test. The modification of this standard system proposed by Mason and Likar has been found useful and permits monitoring during and after exercise. The right and left arm electrodes are placed in the right and left infraclavicular regions, and the left leg electrode at a point halfway between the costal margin and the iliac crest in the left anterior axillary line. So-called "orthogonal" lead systems offer important theoretical advantages, but sufficient data to warrant recommendations for general use have not yet been accumulated.

7. *Technical Quality*—Care in preparation of skin electrode application and the manner of handling signals are important in achieving valid recordings.

8. *Recording Conditions*—Temperature between 68-72°F. (20-21°C.) are recommended with humidity below 50%. Altitude, if above 5,000 feet, should be recorded on the records. It is recommended that meals, coffee and smoking be omitted at least for two hours prior to testing. A large or fatty meal would indicate a longer postprandial interval. All medication should be listed and, where possible omitted at least one week prior to testing or for a time in proportion to pharmacological effects.

9. *Work Load*—(Type of exercise and rate of applying load) No specific work load or exercise procedure presently available is ideal for all purposes. The type of work load utilized should vary with the desired objectives to be obtained in given instances. The work load of the double two step as developed and defined by Master, where the number of steps traversed in a specific time is determined by the age, sex, and the weight of the indi-

vidual, provides a general basis and practical procedure which is most familiar to practicing physicians. Due to the published experience with this procedure it is the acknowledged reference procedure at present for the electrocardiographic confirmation of myocardial "ischemia" in circumstances of suspected angina. There is more concern relative to limitation in its application in the differential diagnosis of chest pain in otherwise healthy, vigorous individuals or for routine screening for preclinical coronary artery disease and for the prediction of later clinical coronary manifestations in clinically normal subjects. In such instances, the work imposed may be insufficient to produce myocardial "ischemia" where tolerance to physical activity is excellent or the condition producing actual or relative limitation of coronary flow is minimal. Likewise, such limited work loads may be inadequate for definitive testing of myocardial function and coronary circulatory reserve, or for monitoring prophylactic or therapeutic exercise programs. The Master Test is not designed for the definition of the maximum exercise capacity.

Work loads involving greater exertion, possibly including multiples of the two step test may be used to stimulate predetermined target pulse rates. It is highly desirable to record the pulse rate during the last 30 second period of any stress test, and the first 30 seconds of recovery.

The advantages and problems in obtaining blood pressure measurements during and after exertion need further investigation. Blood pressure determinations have been found to be informative if taken before the exercise of a double two step exercise test according to the Master table and between the immediate and two minute post exercise tracing.

Other higher submaximal work loads as developed by the utilization of mechanical devices such as the treadmill or bicycle ergometer may be more suitable and prac-

tical especially if other laboratory measurements are desired. Sheffield et al have recommended target pulse rates for their graded exercise test (G X T) at 90 per cent of the group maximal pulse rates determined in their series of sedentary and trained men. In 1967 the Scandinavian Committee on ECG Classification agreed that "It is suggested that the multiple-load routine exercise test is discontinued at a heart rate of 170 in the age group 20-29 years, 160 in the group 40-49, 140 in the group 50-59, and 130 in the group 60-69." These rates are close to 80-90% of the group maximal heart rates achieved in many studies in the literature, as illustrated in Figure I.

Maximal exercise tests are those during which each subject exercises at progressively heavier work loads up to a level at which he exhibits limiting symptoms such as angina or signs such as hypotension or significant arrhythmia or until he is limited by fatigue. Such tests have been utilized by Bruce and his colleagues and others, but have yet to be fully accepted. However, they do have a place for "clearance" evaluations of individuals for high exercise as recommended or implied in some coronary artery disease prevention or exercise programs. Such tests have application in research efforts. It should be emphasized that the two steps or target pulse graded exercise tests (submaximal test) may constitute a maximal load, i.e., precipitate angina and require interruption of the test prior to attaining the target pulse rate. In attempting to approve individuals medically for increased activity, it is important to reach or exceed the intensity of the prescribed regimen for the period of time that is realistically equated with the circumstances, if not the absolute duration of that exercise program.

Most groups endorse the use of multi-stage or progressive increments of load with preliminary warm-up loads. The

DECREASE IN MAXIMUM HEART RATE WITH AGE
FOR HEALTHY MEN

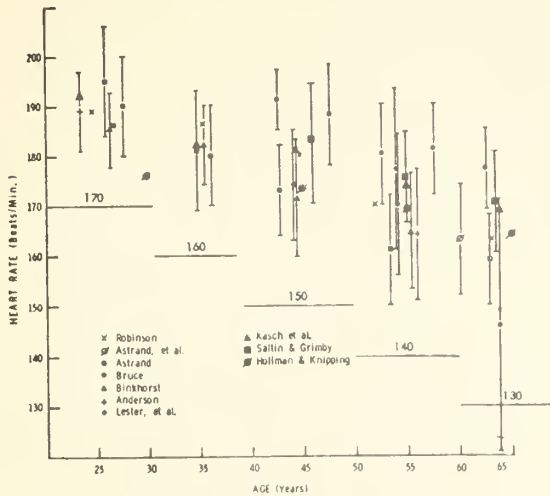


Figure 1. Data from studies of North American and European males under varying conditions and with differing criteria for what was considered acceptably close to "Maximum". The brackets give the spread of one standard deviation. The numbered horizontal lines are the "target" heart rate levels of the "Scandinavian Criteria" for each decade as indicated in the text. Adapted from Fox and Haskell, "The Exercise Stress Test: Needs for Standardization," Proceedings of the Fourth Asian-Pacific Congress of Cardiology, Tel-Aviv, September 1-7, 1968.

types of equipment used appear open to individual preference as long as they enable one to achieve the acceptable rate in a reasonable period of time (submaximal test), or until a self-determined end point of limiting symptoms, untoward signs or certain criteria are met (maximal test). Continuous monitoring is highly desirable and should be maintained until immediately following exercise. The exact time (in seconds) after cessation of exercise until the recording of the ECG should be part of the permanent record and the recording should be initiated no later than 30 seconds after exertion ends and continued for at least five minutes.

Maximal or submaximal exercise stress should not be undertaken unless the physician is trained in cardiovascular physiology and has practical experience in the

procedure involved and is competent to handle complications. It is recommended to have resuscitation equipment available in ready condition. A physician should be immediately available within direct voice communication for all stress testing including the double Master Two Step Test. For maximal or high submaximal levels, direct visual observation of the subject by the physician and voice communication with the subject is mandatory. Immediately prior to exercising, the subject must be evaluated and approved for the test by a historical review, inquiry for, and review of, any symptoms, cardiovascular and other relevant physical examinations and a comprehensive resting ECG. Lower levels of warm-up exercise should be first performed for at least three minutes prior to carrying out high submaximal or maximal level of testing.

Measurement and Criteria for ECG Interpretation

The PR interval where possible should be used as a reference for ST displacement. For measurement of the ECG, at least 2 and preferably 3 or more consecutive beats must lie on a straight baseline drawn through the point of QRS onset of each. Present knowledge permits application of criteria only for the exercise of a double two step test as provided by the Master table. Prospective studies, some of which are well started, will give us an understanding of the significance of ECG changes with other test programs. The incidence of coronary heart disease manifestations has been found in numerous studies to be higher in proportion to the degree of abnormalities found in the post exercise ECG following the exercise of the Master double two step test (or near equivalent) particularly in relation to ST segment displacement. Data suggest a continuum without any sharp change in level of significance making certain criteria quite arbitrary although apparently useful. ST segment displace-

ment should be expressed in millivolts or millivolts and millimeters. Displacement of the ST segment is considered of abnormal degree for the Master test if over .05 millivolts and horizontal or of progressively further displacement with time.

The following are abnormal occurrences, during or after effort, having varying levels of implied increased risk of coronary events, but for which insufficient data are available to establish their significance:

Dysrhythmias

Bundle branch blocks

Inverted T waves becoming upright or increasing in amplitude

T wave inversion of more than two millimeters without ST displacement

Inverted "U" waves

Junctional or "J point" displacement by itself does not appear to relate to the increased risk of coronary disease nor is it associated with coronary disease at the time of examination. A response may look junctional in one lead yet be ischemic in another on the same heart beat when recorded simultaneously. Also when there is tachycardia of severe degree, identification of the type of ST segment is difficult. Inverted T waves less than 2 mm and T of P depression as the only feature do not appear to have coronary disease implications. Autonomic changes (ST-T changes produced by increased sympathetic stimulation) and changes in the presence of left ventricular hypertrophy, bundle branch block, the Wolff-Parkinson-White syndrome, cardiac drugs and some alterations in contour in the presence of diuretics impose difficulties in interpretation.

Although there does not exist a body of long term clinical follow-up information

upon which to base exact ECG criteria of normality or "ischemia" as manifested in the various high performance tests such as the submaximal or maximal test, the following tentative criteria are recommended which are based on the best currently available data from clinical studies. To be significant and suggestive of "ischemia," there must be a flat (slope = zero or less than 1 mV/sec) or downsloping ST segment depression induced by exercise and relieved by rest. The depression must be of an .08 second or more duration, and its displacement amplitude must be at least 0.1 mV measured at the beginning of the ST segment when submaximal or maximal exercise is used.

The measurement criterion is usually applied specifically to the lead which is continuously monitored (V_5 or similar), but may also be applied to any other lead which, in the resting tracing shows a predominant R wave in the QRS complex and an upright T wave. The measurement may be applied to an ECG tracing taken during exercise, in the immediate post exercise period or the late (4-6 minutes) post exercise period. Variations in interpretation of ECG by different observers is a real problem, but are partially corrected by standard criteria and simple measurements.

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III. EXERCISE PROGRAMS FOR THE PREVENTION OF HEART DISEASE WORKSHOP REPORT

The value of planned physical activity programs in the possible prevention of heart disease is a subject which is currently receiving much attention. Numerous books and articles published during the past few years have increased the interest in physical fitness programs and their possible beneficial effects on the cardiovascular system. Participation in organized and individual physical activity programs has increased dramatically and has given rise to questions which accompany participation in vigorous physical activity.

In the past, vigorous physical activity was considered a potential hazard for the healthy as well as for the diseased heart. Today, however, there is suggestive evidence based on experimental, clinical, and epidemiological studies that regular exercise is important for the maintenance of cardiac health. Population studies have strongly suggested that myocardial infarction and death due to coronary heart disease occur more frequently among men categorized as sedentary as compared to men classified as physically active. In addition, retrospective clinical studies indicate a better prognosis following acute myocardial infarction in patients who have been more active. Such findings have prompted the American Heart Association to list physical inactivity as a risk factor in coronary heart disease.

New approaches to the prevention of a disease generally pass through three distinct levels of acceptance: the possibly beneficial, the prudent, and the proved. The value of physical activity as a preventive approach to coronary heart disease today is widely accepted as being both possibly beneficial and prudent. Physicians, exercise physiologists, and physical educators are combining their interest and expertise in creating programs of planned

physical activity to determine the efficacy of this approach. Systematic programs, longitudinal in nature, are being conducted in many cities across the country. The data and information which are being compiled may well shed additional light upon the possible preventive aspects of exercise and its relationship to the prognosis of coronary heart disease.

It is recognized that at this time there is no body of evidence which may reasonably indicate that participation in a vigorous physical activity program protects a person from having coronary heart disease. Since coronary heart disease is often the result of multifactorial causes, an important benefit of exercise to the individual may be in the indirect effects that tend to reduce other risk factors.

Following are questions which were considered by the discussion group and the results of their deliberations:

1. What requirements are recommended prior to participation in a planned program of physical activity?

It was generally agreed that anyone who wishes to begin a program of planned physical exercise should have a thorough physical examination by his physician. Ideally, this examination would include stress and maximum aerobic testing. However, this ideal work-up may not be practical or possible in a great majority of cases. In instances where the ideal work-up cannot be done, an office visit should be made to a physician for the purpose of obtaining medical clearance prior to beginning participation. It is recognized that despite these recommendations a considerable number of people, perhaps a vast majority, could be expected to begin exercise programs without consulting a physician or obtaining any type of clearance. This group presents a particular problem.

All who do not receive an extensive physical examination and work-up including stress testing, should complete a *starter program* prior to participation in a vigorous physical activity program. A *starter program* is defined as a daily program of continuous walking or other low level, noncompetitive activities on a slowly accelerating basis over a period of approximately six weeks. During this period records of subjective feelings, heart rate, time and distance covered should be kept. It is of interest to note that several *starter programs* are now in use in various areas of the country. Two sample *starter programs* are included as appendices 2 and 3.

The results and data compiled during this *starter program* should be reviewed by trained personnel, preferably the subject's personal physician, prior to beginning more strenuous physical activity. Should this record indicate questionable responses to the mild stress of the *starter program*, further physical activity should not be undertaken without medical clearance. Questionable responses would include elevated resting heart rate (90 and up), poor heart rate recovery tendencies following mild exercise as indicated by little or no slowing of the heart rate three to five minutes after cessation of activity, shortness of breath, or any pain induced by activity.

2. What are some recommended activities which may be a part of physical activity programs?

Kinetic exercises are recommended such as brisk walking, jogging, swimming, cycling, and other activities requiring continuous movement, as opposed to weight lifting and isometric exercises. Golf is acceptable if one walks fast between strokes for 18 holes and does not ride a cart. Also, hunting, skiing, and scuba diving are all good for *that day* but hardly provide the frequency of opportunity for participation necessary to be considered prime fitness activities. Sedentary routines based upon the use of vibrating belts, steam baths,

and massage may be psychologically satisfying but are of limited or no physiological value.

3. What is the minimum intensity and duration of physical activity necessary to maintain acceptable, or adequate physical fitness?

Up to this time little consideration has been given to possible answers to this question and no recommendation was offered which was based upon a reasonable body of evidence. It was generally agreed that duration would depend upon the intensity of physical effort, and several programs surveyed were in the 30-40 minute range. The question was raised whether it was desirable to think in terms of a minimum time, which might involve high intensity activity rather than continuous movement over a more prolonged period of time. Serious reservations were expressed concerning the advisability of including high intensity activity as a means of maintaining a desired level of fitness. The concept of intensity, as it relates to a point system for quantifying various forms of physical activity has recently been developed (*Aerobics* by K. H. Cooper).

Using maximal oxygen uptake as a good index of cardiac capabilities, it was generally agreed that duration and intensity of exercise should be sufficiently strenuous to obtain or maintain a performance capacity of from 36 to 42 ml O₂/kg/min on an age adjusted basis to around age 50.

4. What are some of the contraindications to participation in exercise programs?

If an individual has overt heart disease, he should be referred to rehabilitative or therapeutic programs. Also, any other disease or disorders such as orthopedic problems, emotional disorders, etc., may be contraindications which prohibit participation.

Responses *during* exercise which should lead to medical review include the following:

EXERCISE PROGRAMS

1. Any chest pain or pain referred to teeth, arm, jaw, or ear.
2. Syncope, light-headedness, or dizziness following exercise.
3. Irregular heart rate following exercise.
4. Persistent fatigue.
5. Unusual weight loss.
6. Musculoskeletal problems aggravated by exercise.
7. Nausea, vomiting, or a feeling of malaise.
8. Failure of the pulse to recover below the 140 area within five minutes following cessation of exercise.

The heart rate following cessation of exercise should show recovery tendencies toward the resting rate. Failure of the pulse to return to the 120 level within three minutes generally is an indication of working too hard.

5. What are the recommended parts of a work-out or exercise program?

An exercise program should ideally be composed of three parts including warm-up, work phase, and cool-out or tapering-off period. All three parts are important. The initial 5 to 10 minute portion is designed to prepare the cardiovascular system for the more strenuous work ahead. This *warm-up* period may include walking, calisthenics, stretching and flexibility movements, or other activities which do not require explosive movements or high-level energy expenditure.

The second period is termed the *work-phase* during which the activity requires an elevated heart rate placing a degree of stress on the cardiovascular and pulmonary systems. It is highly questionable whether this phase should ever end with a maximal or "all-out" effort.

The third and final phase of the work-out is very important and is termed the *tapering-off* or *cool-out* period. This consists of 5 to 10 minutes of walking or other continuous low level activity with lower extremity involvement. During this im-

portant period of slowly decelerating activity venous return will be stimulated and pooling prevented. Breath-holding, or the Valsalva maneuver *should not* be included during any portion of the activity program.

6. In terms of easily measured parameters, what constitutes light, moderate, and vigorous physical activity?

It must be remembered that as the body ages physiologically maximum heart rate decreases. With this in mind, light physical activity is defined as that requiring heart rates between 100 and 120. Moderate physical effort requires sustained heart rates of 120 to 140. Vigorous physical activity requires continuous heart rates in excess of 140 beats per minute. Subjects who have been sedentary should exercise extreme caution prior to undertaking an exercise program which includes *vigorous* physical effort. In some cases moderate and vigorous physical activity is contraindicated due to obesity, musculoskeletal problems, etc.

7. What environmental factors are important?

It is most important to consider environmental factors such as heat and humidity when participating in a program which includes endurance activities. These factors may be evaluated by using the *Wet Bulb Globe Temperature*. Caution should be exercised when this indicator reaches 80, and endurance activity is contraindicated when the Wet Bulb Globe Temperature is 85 or beyond. This index may be determined as follows:

$$WBGT = 0.7T_{\text{wet bulb}} + 0.2T_{\text{black globe}} + 0.1T_{\text{dry bulb}}$$

Perhaps a more readily available indication of approaching danger to those participating in physical activity programs would be when both temperature and relative humidity readings are in excess of 80.

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IV. EXERCISE AND THE TREATMENT OF HEART DISEASE

WORKSHOP REPORT

This section of the workshop report summarizes current principles of exercise therapy in the management of patients known to have heart disease. Its main intent is to provide specific guidelines for the use of practicing physicians, defining the goals of exercise therapy and the criteria for patient selection. The report includes a resume of exercise test procedures and of exercise prescription as applied to appropriately selected patients with stable angina pectoris or healed myocardial infarction. In all instances, *exercise therapy should constitute only one facet of a comprehensive treatment program.*

I. General

The results of recent clinical investigations indicate that properly prescribed physical exercise offers an effective contribution to the medical management of certain forms of ischemic heart disease. Although a prescribed exercise program may have beneficial effects for certain patients with hypertensive heart disease or for others undergoing rehabilitation after cardiac valve replacement or repair, there is currently no research data available to support this application of exercise therapy.

Exercise clearly can not be regarded as therapeutic for patients with uncorrected valvular disease, myocardiopathies,

congenital malformations of the heart or congestive heart failure of any origin.

Conditioning programs have a promising role in certain psychophysiologic cardiovascular syndromes manifested by chest pain, palpitation, asthenia and at times by T wave abnormalities, especially in young females.

II. Objectives

A. *Palliative effect.* A successful exercise program will reduce symptoms, improve exertion tolerance and counteract the depression or anxiety that regularly accompanies ischemic heart disease. These benefits result from improved cardiovascular conditioning and from improved personal confidence and morale.

B. *Effect on natural history of ischemic heart disease.* Epidemiologic studies and uncontrolled observations of small patient groups for periods up to two years suggest that exercise therapy may reduce the incidence of recurrent myocardial infarction or death. The physiological basis for this apparent benefit is not fully known, but may well include myocardial metabolic changes, improved coronary anastomotic flow and protective peripheral effects of cardiovascular conditioning. Verification and explanation of reported preliminary observations will require extensive further research.

III. Safety

In the accumulated experience of workshop consultants with a total of over 150 patients, many of whom have had severe angina pectoris, the incidence of new myocardial infarction or death has been low during periods of exercise therapy up to two years in duration.

A mandatory safety measure is a preliminary exercise tolerance test. This test must demonstrate the exercise level that each patient can achieve without risk. The test must be repeated prior to each increment in prescribed exercise level.

IV. *Criteria for Patient Selection* (For general indications and contraindication to exercise therapy, see Report of Workshop on Exercise and Rehabilitation.)

Candidates for exercise therapy are patients with ischemic heart disease manifested by stable angina pectoris or by healed myocardial infarction. Preliminary evaluation must include a thorough medical history, physical examination, resting electrocardiogram, cardiac x-ray studies and an exercise stress test. An essential objective of these examinations is assessment of the extent of myocardial damage.

Although acceptance for exercise therapy must be thoughtfully individualized, the preliminary evaluation may be guided by the following general principles:

1. *Age*: General health and motivation are more significant than specific age level. Older patients should not be rejected on the basis of age alone.

2. *Sex*: There is no evidence of a sex-related variation in response to exercise therapy, although experience with female patients has been limited.

3. *Severity of angina*: Severe angina is not in itself a contra-indication to exercise therapy. Some patients may initially require more intensive conventional therapy for control of symptoms. Angina occurring at rest may well be associated with severe myocardial damage and requires special study. Patients with nocturnal an-

gina, but good exertion tolerance, should undergo coronary arteriography in search of a single obstructive coronary lesion.

4. *Stability of angina*: Relative stability of symptoms over a period of several months is a prerequisite for exercise therapy. A history of recent sudden improvement in angina, which at times may indicate an occult myocardial infarction, requires further study to exclude this complication.

5. *Duration of angina*: Patients who have had angina for less than two months should not be considered candidates for exercise therapy because the stability of their disease cannot be adequately assessed.

6. *Recovery period following myocardial infarction*: A convalescence of 3 months should regularly be allowed after acute infarction before evaluation is undertaken for a therapeutic exercise program, as contrasted to a rehabilitative program.

7. *History of congestive failure*: Congestive failure that has recurred or persisted for weeks or months is ordinarily an indication of extensive myocardial damage. Such patients are not candidates for a therapeutic exercise program.

8. *History of severe infarction*: A previous myocardial infarction associated with severe congestive failure or shock due to extensive ventricular injury ("power failure") ordinarily results in major residual myocardial damage. When a patient with such a history is evaluated for exercise therapy, a meticulous evaluation of myocardial reserve and exercise tolerance is essential.

9. *Hypertension*: Moderate blood pressure elevation is not a contra-indication to exercise therapy unless there is an exaggerated increase in pressure during or following exercise. Accelerated hypertension is an absolute contraindication to an exercise program.

10. *Physical examination of the heart*: An abnormal third or fourth heart sound may be an indication of major myocardial

damage and indicates further study. The murmur of mitral insufficiency due to ischemic heart disease, unaccompanied by other evidence of significant valvular insufficiency, is not in itself a contraindication to exercise therapy.

11. *Resting (12 lead) electrocardiogram:* *Intraventricular conduction delay*, including bundle branch block, is not in itself a contraindication to exercise, although it may be a clue to extensive myocardial damage. These defects commonly produce secondary ST segment changes that limit the interpretation of the exercise ECG.

Ventricular Arrhythmias, including frequent premature ventricular beats and short runs of ventricular tachycardia, require careful study. Sometimes their significance may be best evaluated by cautious exercise testing to determine whether the ectopic beats increase or decrease in frequency with higher heart rates induced by exercise.

Atrial fibrillation or flutter is not in itself a contraindication to exercise therapy if the ventricular rate is well controlled.

Bradycardia may impair the cardiovascular response to exercise and require full evaluation and treatment.

Extensive residual QRS abnormalities following myocardial infarction may indicate a large area of myocardial damage. Further study should be considered in order to exclude the possibility of a large akinetic myocardial segment, which would be a contraindication to exercise therapy.

Persistent ST elevation following convalescence from myocardial infarction requires extensive study to search for the presence of a ventricular aneurysm.

12. *Cardiac x-ray studies:* Suitable candidates for exercise therapy will ordinarily have normal heart size or mild cardiomegaly. A ventricular aneurysm or akinetic segment visible on fluoroscopy is a major contra-indication to exercise.

13. *Drugs:* Although experience is limited, patients taking drugs which might interfere with normal cardiovascular responses to exercise, such as propranolol or guanethidine, probably should be restricted to mild exercise, such as walking.

14. *Results of cardiac catheterization studies:* Advanced disease of the coronary arteries on selective arteriography is not in itself a contraindication to exercise therapy when the ventriculogram reveals good ventricular contraction and there are no localized akinetic or dyskinetic myocardial segments.

15. *Coronary adaptation:* Angina patients who have evidence either by history or by exercise testing of coronary adaptation in the form of a capacity to perform better after a warm up or an ability to walk through an episode of angina are the ones most likely to respond well to a therapeutic exercise program.

V. *Summary of technique of exercise tolerance test* (For more extensive description, see previous sections of the workshop report).

A. Objectives:

1. To determine the patient's initial exercise tolerance and to define a safe level for initial exercise therapy.
2. To follow the patient's response to exercise therapy.
3. To verify the patient's tolerance for increments in prescribed exercise level.

B. Equipment:

1. Acceptable exercise equipment may vary from a single step box to a complex bicycle or treadmill apparatus.
2. An electrocardiograph, with provision for constant monitoring during exercise, is mandatory.
3. Equipment for emergency resuscitation, including defibrillation and endotracheal intubation, must be on hand.

C. *Personnel*: A physician must be present during exercise tolerance testing of patients known to have ischemic heart disease.

D. *End-point of exercise test*: The end-point identifies a work level at which exercise-limiting symptoms are present, or at which electrocardiographic danger signs appear. The patient should continue exercise until he reaches one of the following end-points:

1. Anginal pain of moderate severity (2+).
2. Major increase in frequency of ventricular ectopic beats.
3. Limiting fatigue or dyspnea.
4. Progressively increasing ischemic ST segment depression.
5. Significant ST segment elevation.
6. Rise of heart rate to pre-determined target level (85 per cent of maximum age-adjusted heart rate).

VI. *Summary of therapeutic exercise program*

1. *General*: Prescribed exercise programs must be individualized and will depend upon the age, symptoms, physical strength, motivation and personal preferences of the patient. A starter program is essential. *Steady-state exercises such as walking or stationary bicycle ergometer riding are usually the ones best suited to treatment of the cardiac patient.* Swimming is sometimes appropriate but should never be done alone. Outdoor bicycling may be employed if the course is flat and free of hazardous traffic. When hills and upgrades are encountered on a bicycle, they demand a rapid increase in power output which may be hazardous to a sick heart. Running or jogging exercise should be reserved for those who demonstrate on monitored exercise testing that

they are capable of advancing to these highly demanding work-levels.

2. *Level of exercise*: Prescribed exercise should increase the pulse rate to a level 5 to 10 beats per minute below the rate achieved in the preliminary exercise tolerance test (see Section V above). Therapeutic conditioning effects are generally expected at pulse rates of 130 to 140 per minute, but the age of the individual will influence this relationship. Some patients with angina will not be able to achieve target pulse rates in the initial stages of an exercise program.
3. *Regulation*: A controlled leadership program is highly desirable, with close working relationships between the physician and the exercise program leader. For unsupervised exercise, the patient must be taught to regulate his exercise level by taking his own pulse. A ten-second count immediately after exercise is used to verify that the prescribed exercise level is adhered to. In the recovery period, 2 minutes after exercise, a failure of the pulse to slow by 30 to 40 beats may indicate an excessive exercise level. The patient should keep a careful diary of his exercise program and symptoms.
4. *"Warm up" and "Cool down"*: The prescribed level of exercise should always be preceded by at least 10 minutes of milder exertion and followed by a similar period of "cool down" activity.
5. *Duration and frequency of exercise*: These features of the exercise prescription will vary in relation to the patient's motivation and physical condition. A minimum of 30 minutes of exercise at a sustained level within the patients pre-

tested capacity is a practical and effective duration of exercise periods. Three exercise periods a week is ordinarily the minimal frequency for a successful program.

6. *Increments in exercise level:* Progression of exercise levels must be individualized and will depend upon the patient's response to the prescribed program. In an active program, with rapid and successful

patient response, increments may be prescribed every two to three weeks. An exercise tolerance test must precede each increment to establish the patient's new level of tolerance.

7. *Failure of Response:* If the patient fails to improve after 4 weeks of a prescribed program, he should undergo a full re-evaluation of his suitability for this form of therapy.

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V. EXERCISE AND REHABILITATION WORKSHOP REPORT

I. Statement on Exercise

The following statement regarding the advisability of exercise was formulated.

"Epidemiologic and other studies have demonstrated that regular physical activity is associated with a better state of well being, enhanced quality of living, and apparently reduced morbidity and mortality from ischemic heart disease. For these reasons, comprehensive patient care should include enhancement of physical fitness as well as other accepted good health practices, such as healthful diet, weight control, cessation of smoking cigarettes, and, when indicated, specific medical or surgical treatment.

Physical conditioning may be recommended for normal subjects and for selected patients (Table 1) of both sexes in all ages.

Like all therapeutic measures, exercise prescription requires accurate diagnosis, clear and precise patient instructions, and careful follow up. Preliminary medical evaluation must exclude those conditions which contra-indicate increased physical

Table 1

Indications for Supervised Exercise Regimens

1. Healthy subjects who are "coronary prone"
2. Clinically manifest ischemic heart disease
3. Chronic pulmonary disease
4. Intermittent claudication
5. Neurocirculatory asthenia
6. Pre and post operatively in selected patients
7. General deconditioning
8. Certain emotional disorders

activity (Table 2). Evaluation of cardiovascular status and function should include a multi-level exercise stress test. The magnitude, frequency and duration of effort which the patient should perform must be precisely prescribed. Adequate supervision, direction and periodic re-evaluation are necessary."

Scientific evidence supporting the rationale of this exercise statement comes from numerous epidemiologic studies and investigations of the effects of supervised physical conditioning in patients with overt ischemic heart disease. (See selected bibliography).

Guidelines for exercise prescription.

Medical history, physical examination, and appropriate laboratory studies should be performed to exclude the contra-indications listed in Table 2 before permitting a patient's participation in a physical conditioning program. Evaluation of patho-physiologic and functional cardiovascular status is a prerequisite to exercise prescription. (Table 3). Evaluation should include both a standard ECG recorded at rest and a test of dynamic cardiovascular

Table 2
Contraindications to Exercise

A. Absolute

1. Gross Cardiomegaly
2. Congestive Heart Failure
3. Uncontrolled Diabetes Mellitus
4. Uncontrolled Hypertension
5. Severe Anemia
6. Certain Cardiac Arrhythmias
 - a. Second and third degree heart block
 - b. Fixed rate pacemakers
 - c. Paroxysmal ventricular tachycardia
 - d. Untreated atrial fibrillation
 - e. Frequent ventricular extrasystoles at rest which increase in frequency with exercise
7. Obstructive disease of the ventricular outflow tract
8. Moderate to severe valvular heart disease
9. Impending myocardial infarction in a changing pattern of angina pectoris

B. Relative

1. Massive obesity
2. Deforming arthritis
3. Severe varicose veins with history of thrombophlebitis.
4. Caution is required with drugs which may interfere with the normal cardiovascular response to exercise, e.g. Propranolol, Reserpine, Guanethidine, Quinidine, Procaine Amide.

function. Heart rate, blood pressure, and ECG are the parameters which should be monitored before and after exercise, and when feasible during exercise. Several multilevel exercise tests which can be recommended to the practicing physician are described in an addendum to the section on Exercise and Performance Evaluation. Accordingly exercise should be prescribed to tax the individual to approximately 70 per cent of his aerobic capacity or age-determined maximal heart rate.

II. Definition of Rehabilitation

Rehabilitation is defined as the process by which an individual is restored to and maintained at his optimum physiologic, psychologic, social and vocational status. Implicit in this definition is the institution of measures to prevent progression of the underlying disease process.

III. Rehabilitation After Acute Myocardial Infarction

Efforts toward rehabilitation are best considered for each of four time phases following acute myocardial infarction.

Phase 1: Acute illness (Coronary Care Unit), generally the first week.

Phase 2: Remainder of the hospital stay, generally the second and third weeks after infarction.

Phase 3: Convalescence, usually in the home or a convalescent facility, generally the fourth through eighth weeks after infarction.

Phase 4: Recovery, implying that the patient is able to return to work, or other activities of normal daily living.

Throughout each phase the health professionals dealing with cardiac patients should be familiar with the diagnosis and management of acute cardiac emergencies. Appropriate equipment for managing these emergencies should be immediately available during all phases of hospitalization.

In the discussion which follows, rehabilitation measures recommended during each phase are necessarily general, and the application must be modified according to the individual patient's problems and needs. A schedule of specific activities can serve as a useful guide (see tables following papers of Dr. Nanette K. Wenger and Dr. Joseph E. Acker).

Phase 1. (Generally the first week)

This phase is instituted when a patient's clinical condition is relatively stable, often within 24 hours after the myocardial infarction. The contraindica-

tions to increasing the level of physical activity at this time include congestive heart failure, shock, intractable pain and uncontrolled cardiac arrhythmias.

In uncomplicated cases, a gradual increase in activity is permitted. The energy requirements of these activities are low and require an effort which ranges from one to two Mets. A Met is defined as the metabolic rate in terms of oxygen consumption at rest. Two Mets approximate an oxygen intake of 500 ml/min.

Phase 2: (Generally the second and third weeks)

In the absence of complications, activities during Phase 2 should be gradually increased so that by the end of the hospital stay the patient has reached the level of self-care activities at home. These activities require intermittent energy expenditures in the range of two to three Mets.

Self-care activities in the patient's room during the first week of this phase include sitting in a chair for gradually longer periods of time up to one hour three times a day and body motion exercises which are useful in preventing joint and muscular discomfort. In general, in uncomplicated cases, the patient is ambulatory in his room during the second week of Phase II. By the end of the third week after infarction (usually about the time of discharge from the hospital) the patient usually has advanced to walking a distance of 50 to 100 feet in the hospital corridor.

The times of activity should be interspersed with periods of rest. More strenuous activity should be avoided for one hour following meals. Before and after each new level of activity, symptoms, signs, pulse rate and blood pressure should be monitored. When possible, a single bipolar electrocardiogram should be recorded before and after a major new activity, such as walking, using identical placement of the electrodes with each new evaluation. Cardiac rate, rhythm, and ST

segment changes should be carefully evaluated. Ideally, the electrocardiogram should be interpreted at the time of the new activity. The same criteria for abnormal responses to added activity apply in Phase 2 as in Phase 1.

Phase 3. (Fourth to eighth week, at home or in a convalescent facility)

In the absence of complications, the activities of Phase 3 should be gradually increased so that by the end of the eighth week the patient has achieved a level commensurate with his level of energy expenditure on the job.

In the uncomplicated case, activities during the first two weeks of this phase include self-care and routine activities in the house, including some stair climbing and light housework. Certain household activities such as bed stripping and making, clothes washing and hanging, floor mopping and scrubbing should be avoided.

The patient who remains asymptomatic should increase his level of activity in a gradual and self determined way so that by the end of the fourth or fifth week after infarction he can walk a total of approximately one-half to one mile a day comfortably. These walks should be divided into two or three periods of approximately equal duration. The program should be well within each patient's capabilities and he should be symptom free.

Before increasing the pace and distance of exercise further in the *sixth through eighth* weeks after infarction, the patient should be carefully re-evaluated by his physician. This assessment should include a medical history, with careful questioning about what level of daily activity the patient has reached, and his symptomatic response to this activity, physical examination, and appropriate laboratory tests including ECG and a chest x-ray film to determine heart size. Cardiovascular function should be assessed by an *effort test* of a magnitude equal to that of the activities which the subject was per-

Table 3

Proposed Format for the Functional Classification
of Cardiac Patients

Class	Category					
	Symptoms	Pathophysiology	Aerobic Power Limitations	Psychologic Adjustment	Social Adjustment	Vocational Adjustment
I						
II						
III						
IV						

forming during the previous week, e.g., walking half a mile, stair climbing, etc. The response to this effort test can serve as a useful guide to the physician in regulating future activities of the patient. Adverse responses to the exercise test, which indicate a need to decrease rather than increase activities, include an immediate post-exercise heart rate of more than 120 beats per minute; a total of more than 350 heartbeats in the first three minutes after exercise; a drop in systolic blood pressure of more than 20 mm of mercury during exercise; or significant changes in the ECG.

The patient with an essentially normal effort test response should be advised to increase the duration and speed of walking during the next three weeks (sixth through eighth week after infarction) in order to increase his endurance and strength in preparation for his return to work. In general, in the patient who has shown no adverse response to the preceding carefully monitored graduated activity program, a reasonable goal is to obtain a capacity for walking a mile in 20-25 minutes at least once a day, with a peak level of energy expenditure not exceeding four to five Mets.

Phase 4. (Return to work or other ac-

tivities of normal daily living)

In the fourth phase the majority of patients will have recovered sufficiently to return to their previous occupations. In selected cases, where the required energy expenditure of the job exceeds four to five Mets, additional time to recover sufficiently may be required. In some instances, work reclassification may be indicated. In selected uncomplicated cases, participation in a continuing program of supervised physical fitness beginning three months after infarction may be desirable, after careful physician clearance including exercise testing. The methods and indications for long-term active physical training are discussed elsewhere in this report under the titles of Exercise and Treatment and Prevention of Heart Disease.

It should be reemphasized that the activity program outlined for Phases 1 through 4 is recommended only when carefully monitored by a physician who is thoroughly competent to detect even the earliest symptoms, signs, x-ray, or ECG evidence of functional cardiac distress. Particular caution is necessary when there is any recurring angina pectoris, any evidence of ventricular aneurysm, congestive heart failure, or unstable cardiac rhythm.

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- Moderator, Herman K. Hellerstein, M.D.
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- Consultant, Robert M. Levenson, M.D.
- Consultant, Nanette Wenger, M.D.
- Recorder, Hubert Wouters

WORKSHOP RECOMMENDATIONS

EXERCISE PROGRAMS AND FACILITIES:

1. A systematically organized, large-scale application of the cardioprotective principles of regular vigorous physical activity should be sponsored by health authorities and the medical profession.

2. In view of the cost of exercise programs in equipment and professional service, it is desirable to establish centers where exercise testing and controlled exercise programs can be effectively provided. Work evaluation units may offer a useful facility for such programs.

3. Local advisory boards, each including a physician and an exercise specialist, should be established to advise groups that are conducting exercise programs or are employing exercise tests to measure cardiovascular fitness.

INTERDISCIPLINARY COOPERATION:

1. There is a major need for cooperation between physicians and physical educators in the establishment of controlled leadership exercise programs for selected patients with ischemic heart disease.

2. It is highly recommended that lines of communication should be established between practicing physicians and physical educators who are interested in the health aspects of exercise. For patients entering an exercise program, the family physician should provide a written statement that the participant is free from disease, or, if disease is present, that exercise is not contraindicated. It would be desirable for the physician's statement to include a quantitative assessment of the patient's exercise performance capacity, with recommended exercise levels either in terms of energy expenditure or terms of maximum heart rate.

EDUCATIONAL NEEDS RELATED TO EXERCISE PROGRAMS:

1. Interdisciplinary educational programs are needed. Enhancement of physical fitness of specific patients and population groups requires a team approach by health professionals. More information must be developed and disseminated to physicians, paramedical personnel, and physical educators about the assessment

of cardiovascular function and the techniques available for enhancing physical condition.

2. There is a need for two-day workshops for physicians interested in prescribing exercise therapy. These workshops should be conducted in centers currently carrying out well-organized therapeutic exercise programs.

3. It is recommended that paramedical personnel engaged in exercise testing and exercise programs be trained in cardiopulmonary resuscitation, including the use of an airway, closed chest cardiac compression and cardiac defibrillation.

EXERCISE AND REHABILITATION:

1. A more comprehensive and inclusive scheme for classification of functional cardiac status should be developed. The present New York Heart Association Functional Classification is limited to symptoms and signs. A more meaningful classification should include a numerical estimation (from one to four) of the following parameters: (a) symptoms; (b) pathophysiologic status; (c) aerobic power limitations; and (d) psychologic, social and vocational adjustment.

2. There is a need for a pharmacopeia of the energy requirements (caloric levels or ml O₂/kilogram of body weight per minute) of various activities involved in daily living, isotonic exercises, etc. This pharmacopeia should reflect differences in duration, frequency and intensity of various exercises and daily activities. It should also reflect, when possible, the effects of a given activity on an ill or deconditioned patient as opposed to a "normal" subject.

3. The role of the nurse outside the coronary care unit should be enhanced. Since the expanded role of the nurse in the Coronary Care Unit has proved so valuable, and since active participation of the nurse is required for management of the coronary patient after transfer from the CCU, instruction in rehabilitation and in diagnosis and treatment of cardiovascular emergencies should be pro-

vided for nurses engaged in care of patients with myocardial infarction during the remainder of their hospitalization.

4. There is a need for special cardiac reconditioning units. Special hospital areas should be developed for the care of the patient with acute myocardial infarction after transfer from the Coronary Care Unit. These cardiac reconditioning units should be staffed and equipped so that the recovery phase of patients with acute myocardial infarction is expedited under ideally controlled conditions.

RESEARCH EFFORTS:

1. There is an urgent need to develop a better understanding of the significance of various electrocardiographic changes and other abnormal responses produced by a variety of stress test schedules and work loads, so that we may more exactly derive information on which coronary prevention programs and medical management can be effectively undertaken.

2. There is a need for basic research to determine the effects on the patient of caloric expenditures of varying magnitude during different phases of acute illness and convalescence following myocardial infarction. Until such information is available, the Workshop Report on Rehabilitation provides empirical guidelines based on considerable practical experience.

Conference Resolution,

Introduced by Dr. George A. Hellmuth

Mr. Chairman, I should like to recommend that the results of the deliberations of this workshop held at Myrtle Beach, South Carolina on May 6, 7, and 8, 1969 be communicated to the American Heart Association and that a special committee of the Association be appointed for the purpose of pursuing exercise in relation to the prevention, the evaluation, and treatment of heart disease with the following objectives:

(1) To inform physicians throughout the country by the American Heart Association affiliates and chapters of the body of knowledge formulated here;

(2) To inform the paramedical profes-

sions and other individuals directly or indirectly involved in exercise programs of the results of this meeting, projected in the form of practical guidelines;

(3) To stimulate the use of mass communication media in order to disseminate appropriate information on exercise to society.

SUMMATION OF GUIDELINES ON EXERCISE

"Epidemiologic and other studies have demonstrated that regular physical activity is associated with a better state of well being, enhanced quality of living, and apparently reduced morbidity and mortality from ischemic heart disease. For these reasons, comprehensive patient care should include enhancement of physical fitness as well as other accepted good health practices, such as healthful diet, weight control, cessation of smoking cigarettes, and, when indicated, specific medical or surgical treatment.

Physical conditioning may be recommended for normal subjects and for selected patients of both sexes in all ages.

Like all therapeutic measures, exercise prescription requires accurate diagnosis, clear and precise patient instructions, and careful follow-up. Preliminary medical evaluation must exclude those conditions which contra-indicate increased physical activity. Evaluation of cardiovascular status and function should include a multi-level exercise stress test. The magnitude, frequency and duration of effort which the patient should perform must be precisely prescribed. Adequate supervision, direction and periodic re-evaluation is necessary."

I. EXERCISE AND PERFORMANCE EVALUATION

1. Exercise testing may be used to:
 - a. Help identify pre-clinical heart disease
 - b. Ascertain a subject's physical fitness
 - c. Study increments and decrements in subjects' physical fitness capacity
2. A laboratory evaluation is necessary

to determine accurately energy expenditure for a specific activity for a given patient.

3. Exercise test procedures must be carefully standardized, using any of three possible test modes: treadmill, step ergometer, or bicycle ergometer (Appendix 1)
4. A multi-stage exercise test permits evaluation of heart rate and electrocardiograph response at more than one work load and is probably safer. A multi-stage procedure is necessary when testing maximum exercise performance.
5. In presumably health individuals, a maximum exercise test should be used whenever possible, since additional information may be gained over the sub-maximum test.
6. Exercise heart rates may be used to gauge the strenuousness of physical activity, and to set physical activity limits. When local considerations warrant, sub-maximum exercise testing to target heart rates may be done in lieu of maximum testing. Age adjusted target heart rates corresponding to approximately 80 to 90 percent of maximum aerobic power are as follows:

Age	Target heart rates
20-29	170 beats per minute
30-39	160 beats per minute
40-49	150 beats per minute
50-59	140 beats per minute

7. Asymptomatic attainment of the target heart rate would permit a patient to be cleared for exercise up to this heart rate intensity.
8. Precautionary measures must be instituted when doing exercise testing,

especially for maximum tests.

- a. A physician should be present whenever possible during testing.
- b. Trained paramedical personnel may conduct exercise tests under certain conditions, but should be supervised by a physician.
- c. Cardiopulmonary resuscitation equipment and personnel trained in CPR techniques should be immediately available.

II. EXERCISE AND STRESS TESTING

1. When electrocardiographic exercise testing is to be used, consideration of the following factors is very important: Age, sex, physical characteristics, habits, instrumentation, technical quality, recording conditions, lead systems and work loads.

2. Standard lead systems may be used but bipolar leads with the positive electrode at V_5 position and the negative electrode in the right subscapular or right infraclavicular regions, on the forehead or on the manubrium have proven very effective. Monitoring by cable (hard wire techniques) has reduced the need for radio-telemetry.

3. No specific work load or exercise procedure presently available is ideal for all purposes. The double Master's Two Step Test can be used as a warm up. If this is abnormal or the heart rate reaches the proposed Scandinavian age-adjusted rates (170 in the age group 20-29 years, 160 in the groups 30-39, 150 in the groups 40-49, 140 in the groups 50-59, and 130 in the groups 60-69) then further testing is less useful. In the event these end points are not reached, then one might proceed to achieve these with a higher level of submaximal exercise which can be performed by the Two Steps, treadmill or bicycle ergometer (see Appendix I). The target pulse rates are designed to avoid maximal testing of the bulk of the population, but in no way means a person should be driven to accomplish the target rate if he develops symptoms or signs prior to attaining it. Maximal exercise test procedures have yet to be fully ac-

ceptable for routine evaluation, but do have a place for "clearance" evaluation of individuals for high level exercise as recommended or implied in some current exercise programs.

4. Displacement of the ST segment of .05 millivolts (0.5 mm) or more of the horizontal or downsloping type is considered of abnormal degree for the double Master's test and .1 millivolts (1 mm) or more for the higher submaximal test. Dysrhythmias, bundle branch blocks, inverted T waves becoming upright or increasing in amplitude, T wave inversion of more than two mm without ST displacement and inverted "U" waves are abnormal occurrences with varying levels of implied increased risk related to coronary artery disease, but for which insufficient data are available to establish their significance. Junctional or "J" point displacement by itself does not appear to imply increased risk of coronary disease. Inverted T waves less than 2 mm and T of P depression as the only feature do not appear to have coronary disease implications. Autonomic ST-T changes and changes in the presence of left ventricular hypertrophy, bundle branch block, the Wolff-Parkinson-White syndrome, cardiac drugs and diuretics impose difficulties in diagnostic interpretations.

III. EXERCISE PROGRAMS FOR THE PREVENTION OF HEART DISEASE

1. Any one who wishes to begin a program of planned physical exercise should have a physical examination by a physician.
2. A starter program should be completed prior to participation in a vigorous physical activity program. (Appendices 2 and 3)
3. Kinetic exercises, such as walking, jogging, swimming and cycling are recommended as opposed to weight lifting and isometric or static exercises.
4. Duration of physical activity is dependent upon intensity. Serious reservations exist concerning the advis-

ability of high intensity activity as a means of maintaining a desired level of fitness.

5. Responses during exercise which should lead to medical review include the following:
 - a. Any chest pain or pain referred to teeth, arm, jaw, or ear.
 - b. Syncope, light-headness, or dizziness following exercise.
 - c. Irregular heart rate following exercise.
 - d. Persistent fatigue.
 - e. Unusual weight loss.
 - f. Musculoskeletal problems aggravated by exercise.
 - g. Nausea, vomiting, or a feeling of malaise.
 - h. Failure of the pulse to recover below the 140 area within five minutes following cessation of exercise.
6. The heart rate following cessation of exercise should normally show recovery tendencies returning to the 120 level within approximately 3 minutes. If higher rates persist this may be an indication of overwork. See 5h above)
7. An exercise program should be composed of three parts, including warm-up, work phase, and cool-out or tapering-off period.
8. Subjects who have been sedentary should exercise extreme caution prior to undertaking an exercise program which includes vigorous physical activity.
9. In terms of heart rate for men of ages 35-55, light, moderate and vigorous physical activity may be defined as follows: Light—100-120, Moderate — 120-140, Vigorous — 140 and up.
10. Breath holding or the Valsalva maneuver should not be in any portion of the activity program.
11. Environmental factors such as heat and humidity should be considered

when participating in a physical activity program.

IV. EXERCISE AND THE TREATMENT OF HEART DISEASE

Cardiovascular conditioning through exercise therapy is a valuable addition to the comprehensive management of carefully selected patients with stable angina pectoris or healed myocardial infarction. Beneficial effects include improved exertion tolerance and increased self-confidence. It is probable, although unproved, that exercise therapy can reduce morbidity and mortality from ischemic heart disease in these patients.

I. Patient Selection:

Evaluation must include medical history, physical examination, resting ECG and cardiac x-ray studies, principally to exclude extensive myocardial damage, which would greatly limit the potential benefit of exercise therapy and increase its hazards. Signs or symptoms of congestive heart failure, moderate or severe cardiomegaly, and unstable or increasing angina pectoris are important contraindications to exercise.

II. Exercise Stress Test:

An initial exercise tolerance test identifies the work level at which exercise-limiting symptoms are present or at which electrocardiographic danger signs appear. The test must be carried out with electrocardiographic monitoring under direct supervision by a physician. The recommended end-points are:

- A. Anginal pain of moderate severity (2+).
- B. Major increase in frequency of ventricular ectopic beats.
- C. Limiting fatigue or dyspnea.
- D. Progressively increasing ischemic ST segment depression.
- E. Significant ST segment elevation.
- F. Rise of heart rate to pre-determined target level (approximately 85% of maximum age-adjusted heart rate).

III. Exercise Therapy Program:

1. A starter program is essential (Appendix 2.).

2. **Steady-state** exercises such as walking or stationary bicycle riding are ordinarily most suitable for cardiac patients.
3. The prescribed exercise level is determined by the results of the exercise stress test. The target pulse rate during exercise periods is ordinarily 5 to 10 beats per minute below the rate achieved at the end-point of the exercise tolerance test. Although a controlled leadership program is highly desirable, the patient may monitor his own exercise by counting his pulse immediately after the exercise.
4. Warm-up and cool-down activities are necessary.
5. Exercise periods should last at least 30 minutes three times a week.
6. Increments in exercise level will be guided by the patients' response and should always be preceded by an exercise stress test to assure satisfactory tolerance for higher work loads

V. EXERCISE AND REHABILITATION

Rehabilitation after acute myocardial infarction should begin as soon as the patient is stable and should include carefully prescribed and monitored physical activity. Each increase in activity must be closely supervised by a physician thoroughly competent to detect by clinical or laboratory observations even the earliest evidence of functional cardiac distress.

Phase 1 (generally the first week after infarction). Intermittent activity requiring gradually increasing energy expenditure includes self care, use of bedside

commode, extremity movement, and sitting in a chair.

Phase 2 (generally the second and third week). In the absence of complications, activity is gradually increased so that by the end of his hospital stay the patient has reached the level of self care activities at home. Activities include progressively longer periods of sitting in a chair, self care, and ambulation first in the hospital room and usually in the corridor prior to discharge. An ECG before and after major new activities is recommended, along with continuous careful clinical evaluation.

Phase 3 (fourth to eighth week, at home or in a convalescent facility). Keeping within his capabilities and remaining symptom free, the patient progressively increases daily activities during the fourth and fifth week, including routine household activities and walking at his own pace several times a day. At the end of the fifth week, the patient should be carefully re-evaluated by his physician, including an effort test of a magnitude equal to the activity being performed during the previous week. If this examination shows favorable results, activity continues to progress during the sixth through the eighth weeks toward a goal of walking a mile in 20 to 25 minutes comfortably.

Phase 4 (return to work or other activities of normal daily living). When the patient's job requires heavy energy expenditure, additional time may be required to recover sufficiently and in some cases work reclassification is necessary.

APPENDIX 1

EXAMPLES OF GRADED EXERCISE TESTS

Prepared by John Naughton, M.D.

In recent years, many clinical investigators applied the principles and methods developed by work physiologists to the appraisal of the cardiac patient. At the present time treadmills, bicycle ergometers and steppers are used in these evaluations. Whatever the instrument, the principles employed are usually the same. In general, it is recommended that an individual begin an exercise test with a brief period of warm-up at a level of energy expenditure which doubles that of the resting metabolic state. Following recovery the actual test is administered. In most of the commonly used exercise tests an individual begins exercise at a relatively low effort of energy expenditure; the effort is increased periodically, either intermittently or continuously, until the patient approaches a predetermined end-point such as heart rate, respiration, symptoms, etc. The minimum items which should be monitored during the control period, throughout the exercise and during the first ten minutes of recovery include blood pressure (auscultatory method), pulse rate and a single lead electrocardiogram.

Examples of exercise tests utilizing a treadmill, bicycle ergometer and stepper are described below.

a. Treadmill test

In 1963, Naughton¹ reported a modification of the maximum aerobic work capacity test of Balke.² Each patient began walking on a treadmill at a speed of 2.0 m.p.h. on a level grade. The speed was held constant while the slope of the treadmill bed was elevated 3.5 per cent every three minutes. Blood pressure and pulse rate were recorded by the auscultatory method during the last half of each minute. A single lead electrocardiogram (obli-

que) was monitored continuously throughout the test with representative samples recorded each minute. Minute ventilation was measured from a 120 liter Tissot respirometer, and respiratory gas exchange was measured with a Scholander Gas Analyzer.

The initial level of energy expenditure required twice that of the resting metabolic state; i.e., 2 Mets. Each new level added another increment and therefore, represented 3, 4, 5 etc., times the oxygen requirements of rest. This test was terminated either after the eighteenth minute on a 17.5 per cent grade (work requirement = 7 Mets or 8.75Kcal.), or earlier if the patient became symptomatic or developed serious electrocardiographic alterations. It was a continuous test characterized by an absence of recovery periods. Since the peak efforts induced approximated only 7 Mets, it was not an appropriate test for evaluating the cardiorespiratory reserve of an individual with a high aerobic capacity. However, since the average sedentary American man has an aerobic working capacity in the range of 9 to 10 Mets, this test is probably adequate for most clinical appraisals. (Table 1)

Table 1

Two Mile Per Hour Treadmill Test						
Per Cent Grade	0	3.5	7.0	10.5	14.0	17.5
O ₂ ml/kg min	7.0	10.5	14.0	17.5	21.0	24.5
Kcal per min	2.5	3.7	5.0	6.25	7.5	8.7
METS	2	3	4	5	6	7
Pulse Rates	97	105	114	126	133	144

The energy costs of treadmill walking at 2.0 mph at various slopes are tabulated in terms of the oxygen intake, Kcal per minute and METS. The pulse rate figures represent average values measured in healthy, middle-aged sedentary men.

b. Bicycle Ergometer

A bicycle ergometer is a calibrated instrument on which patients exercise either sitting erect or in the supine position. In

evaluating the patient with a healed myocardial infarction most tests have utilized the sitting posture. As is the case with the treadmill, there are continuous and intermittent types of tests. One of the more popular tests in the United States is that reported by Hellerstein.³ This test is an intermittent work capacity procedure on which a patient begins pedalling at an energy requirement of 300 Kpm per minute (oxygen uptake approximates 550 ml O₂ per minute) for six minutes followed by a rest period of four minutes. If the patient is asymptomatic the workload is increased another 150 Kpm (170 ml O₂/min), and the patient again pedals for six minutes before resting for four. These intervals are increased in increments of 150 Kpm until the patient's heart rate reaches 150 beats per minute. The minimum parameters which should be measured during this test include blood pressure, pulse rate and a single lead electrocardiogram.

Some bicycle ergometers are calibrated in watt-seconds rather than in Kpm. A watt represents 6.1 Kpm of effort. Depending on the mechanical efficiency of the patient each Kpm requires from 1.52 to 1.80 ml oxygen, with the average figure being 1.2 ml O₂/Kpm. Therefore, pedalling against a resistance of 25 watts represents a workload of approximately 150 Kpm⁷, which necessitates 258 ml O₂ per minute in addition to the patient's resting metabolic requirements.

The bicycle ergometer is the preferred instrument in most European countries while the treadmill is most often utilized in the United States. These preferences probably reflect the differences in activity patterns between the two continents. However, the bicycle ergometer is a little more difficult to standardize with the Met system, because the relative work for a smaller individual will be greater than for a heavy patient. For example, a workload of 300 Kpm approximates a total energy requirement of 600 ml oxygen per minute. For the 70 Kg patient this would repre-

sent a workload of 8.5 ml O₂/Kg or 2.5 Mets compared to 1.5 Mets or 6.0 ml O₂/Kg from the patient who weighs 100 Kg. (Table 2)

Table 2
Average Energy Costs of
Upright Bicycle Ergometer Tests*

Watts	Kpm/min	O ₂ , ml per min	Kcal/min	METS
50	305.0	549.0	2.74	2
75	457.5	823.5	4.11	3
100	610.0	1098.0	5.48	4
125	762.5	1372.5	6.85	5
150	915.0	1647.0	8.22	6.5
175	1067.5	1921.5	9.95	8
200	1220.0	2196.0	10.96	9

The energy costs of pedalling a bicycle ergometer at various loads are compared in terms of the oxygen intake, Kcal per minute and METS.

*This table is constructed on the basis that each watt or resistance is equivalent to 6.1 Kpm of work, and that each Kpm requires approximately 1.8 ml O₂.

c. Steppers

The most commonly employed step-test has been that of Master.⁴ Since this test has been amply described in the literature its assets and deficits⁵ will not be discussed here. A standardized step test provides the practicing physician many potential advantages over the treadmill or bicycle ergometer. The equipment is relatively inexpensive; it is compact and can be placed in a small area of the office or hospital; it provides a form of activity with which most ambulatory patients are familiar.

In 1965, Nagle, Balke and Naughton,⁶ reported a gradational step test for evaluating the work capacity of patients. These investigators designed a platform which was lifted vertically either manually or automatically. The stepper was equipped with a centimeter ruler for measuring the distance of the vertical lift. The rate of stepping was controlled with a metronome and two tests, each of which utilized different stepping speeds; namely, 24 and 30 steps per minute respectively were developed. The first stepping speed of 24 steps per minute corresponded to the 2.0 m.p.h. treadmill test described above while the 30 step per min-

ute test related to the maximum aerobic work capacity test of Balke in which the subjects walk at a pace of 3.4 m.p.h.

Table 3

**Comparison of Energy Requirements
Between Treadmill and Step Tests**

Mets*	Average Oxygen Consumption	Treadmill % Grade		Step Test Cm Height	
	ml/kg/min	2.0 mph	3.4 mph	24/min	30/min
2	7.0	—	—	—	—
3	10.5	3.5	—	5.0	4.0
4	14.0	7.0	2.0	11.7	8.0
5	17.5	10.5	4.0	18.3	12.0
6	21.5	14.0	6.0	25.0	16.0
7	24.0	17.5	8.0	28.3	20.0
8	27.5	—	10.0	35.0	24.0
9	31.0	—	12.0	—	28.0
10	34.5	—	14.0	—	32.0

*A Met represents the oxygen consumption of the resting metabolic state and for purposes of this table a Met is 3.5 ml O₂/kg/min.

The energy requirements between treadmill walking and step tests are compared.

For clinical application, the 24-step test is usually recommended. In this test, the patient begins stepping at a rate of 24 steps per minute at a platform height of 3.3 cm. The level of the platform is raised 1.7 cm every two minutes while the blood pressure, pulse rate and electrocardiogram are measured and recorded each minute. As was the case with the 2.0 m.p.h. test, some subjects will not attain their aerobic limitations.

In contrast to the treadmill and ergometer tests, patients do occasionally com-

plain of tightness and soreness in their gastrocnemius muscles following the test. The complications are sometimes alleviated if the patient alters the foot on which he lifts initially every 30 to 45 seconds throughout the test. While the aerobic work accomplished either on a treadmill or bicycle ergometer can usually be predicted accurately, such may not be the case with a step test, since a patient can decelerate or accelerated his cadence subtly and almost imperceptibly. For example, Mayron and Pouget⁷ found a significant difference between the oxygen requirements of patients with angina pectoris and healthy subjects following exercising at a rate of 24 steps per minute on a 22.9 cm (9 inch) step. These differences were accounted for by the fact that the patients could walk for only 4 instead of 6 minutes and because they probably stepped at a slightly slower rate than did the healthy subjects. However, when restudied on a six inch step at a rate of 24 steps/min, the mean oxygen requirements were almost identical in the patient and the healthy groups, i.e., 17.1 ± 0.75 and 17.4 ± 0.7 ml O₂/kg., respectively. These findings support the concept that any form of exercise test should begin with a relatively low threshold of energy increment well within each patient's aerobic power and capacity. If applied in this manner, meaningful information for the development of a sound and scientific exercise prescription will be available to the physician.

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APPENDIX 2

ADULT FITNESS STARTER PROGRAM FOR INDIVIDUALS CONSIDERED TO BE AT HIGH RISK FOR CORONARY HEART DISEASE

Prepared by John L. Boyer, M.D.

Phase I (Daily Walk)

The purpose of the walking program is to help decrease your cardiovascular disease risk from a high risk level, where you are now, to an intermediate risk level. It is *not necessary* to do high activity or high intensity work such as jogging to accomplish this change. As a matter of fact, jogging in your situation could be harmful. Low activity or low intensity daily work (walking) is all that is needed for the next three months to improve your fitness level significantly. Because of the work level, the walk-workout should be done *daily*. Two or three times a week at this calorie load is not frequent enough to produce positive changes.

Do not jog until this first three months phase of your conditioning program is completed. At the end of Phase I you will be re-evaluated and the second three months program (Phase II) discussed with you.

To obtain maximum benefit from your beginning fitness program and to help me evaluate your progress:

(1) *Keep a daily record.* A simple chart of the date, distance covered, amount of time of continual walking, 10 second pulse count at end of walk and any symptoms or comments you want to add. Bring chart with you on your next visit.

(2) *Walking should be continual and rhythmic.* Swing your arms and stride along at an even rhythmic pace. Do not stroll along and do not stop unless necessary. Use loose fitting clothing and comfortable shoes.

(3) If your *heart rate at the end of your walk* is over 115 beats per minute decrease the speed of your walk and the distance covered and phone my office.

(4) *Keep active during the day.* Develop better movement habits. Park several blocks away from the job or office. Walk a little on your lunch hour. Walk up a flight or two of stairs. Encourage your wife to take a little walk with you an hour or so after dinner. Begin to think in terms of activity. Sit less—move more.

(5) Try a little *more active recreation* such as golf, swimming, bowling, social dancing and gardening. Do not count this, however, as a substitute for your daily walk.

(6) Remember that *diet control* (restricted dietary fats and proper body weight); a controlled and guided *exercise program* and *abstinence from tobacco* will significantly improve your fitness level and your entire cardiovascular system.

The Walk Schedule—12 Week Program.

(1) *First and Second Weeks.*

Measure a one mile distance.

Cover this distance in 20 minutes out and 20 minutes back.

Total distance equals 2 miles. Total time equals 40 minutes.

If pulse below 115 per minute at end of each daily walk go on to next level.

If pulse 115 per minute or over contact office.

(2) *Third and Fourth Weeks.*

Measure a one and one-half mile distance.

Cover this distance in 30 minutes out and 30 minutes back.

Total distance equals 3 miles. Total time equals 60 minutes.

If pulse below 115 per minute at end of each daily walk go on to next level.

If pulse 115 per minute or over contact office.

(3) *Fourth thru Sixth Weeks.*

Measure a 2 mile distance.

Cover this distance in 36 minutes out and 36 minutes back.

Total distance equals 4 miles. Total time equals 72 minutes.

If pulse below 115 per minute at end of each daily walk go on to next level.

If pulse 115 per minute or over contact office.

(4) *Seventh thru Ninth Weeks.*

Cover the 2 mile distance in 30 minutes out and 30 minutes back. Total distance equals 4 miles. Total time equals 60 minutes. This is a 15 minute per mile pace.

If pulse below 115 per minute at end of each daily walk go on to next level.

If pulse 115 per minute or over contact office.

(5) *Tenth thru Twelfth Weeks.*

Cover the 2 mile distance in 28 minutes out and 28 minutes back. Total distance equals 4 miles. Total time equals 56 minutes. This is a 14 minute per mile pace and just below a slow jog.

When you can do this with relative ease, you are ready for Phase II—the jogging program.

Remember: Be active—not sedentary.

Report to me if you develop any of the following symptoms during or after your daily walk:

- (1) Excessive fatigue. You should feel completely recovered by one hour after your walk.
- (2) Any joint, muscle or ligament problem. Do not attempt to "work out" muscle or ligament soreness.
- (3) Any chest pain or pain in teeth, jaw, arm or ear.
- (4) Lightheadedness or dizziness.
- (5) Any irregularity of the pulse.
- (6) Nausea or vomiting or headache.
- (7) A pulse count over 115 beats per minute. Count your pulse for the first 10 seconds and multiply by 6.

Additional instructions:

Medications:

APPENDIX 3

STARTER PROGRAM

Prepared by WARREN K. GIESE, Ph.D.

This is a ten week "Starter Program" designed to prepare you for more strenuous physical activity. It is important that you follow directions carefully and that you do not exceed the prescribed amount of activity. You should participate in a minimum of three activity sessions per week and more frequent participation is desirable, so long as you do not exceed the amount of activity per session prescribed for that week.

Each activity session should include a *warm-up*, a *work-phase* and a *cool-out* or *tapering-off* period. It is extremely important that you do not skip the first and third portions of the work-out.

The warm-up is designed to gradually increase the stress placed upon your cardiovascular system. It includes calisthenic activities designed to use most major muscle groups and to slowly strengthen those which you may have had a tendency to neglect, namely the abdominals, and muscles in the shoulder area.

The work-phase of the program is designed to place gradually increasing amounts of stress upon your heart and cardiovascular system and you should be careful not to exceed the distances and time requirements as stated. If any unusual responses are noted, such as chest pain, dizziness, or light-headedness, you should see your physician before contin-

using this "Starter Program."

The cool-out period should be at least five minutes in length and is simply a slow deceleration of activity involving use of the lower extremities.

Following successful completion of this

10 week "Starter Program," you should be ready to begin another stage of your re-conditioning effort. This 15 week program will include alternating periods of moderate speed walking and slow paced running.

Exercise Period (25-35 Minutes)

WARM-UP Calisthenics (5-8 minutes)

Exercise	WEEKS									
	1	2	3	4	5	6	7	8	9	10
Arm Circles (Forward and Backward)	10	15	20	25	25	30	30	30	30	30
Side Bends (Each side)	10	15	20	25	25	25	25	25	25	25
Toe Touches (Feet apart)	Three sets of ten									
Toe Hops (Alternate legs) 10-9-8-etc.	10	10	10	10	10	10	10	10	10	10
Side Straddle Hops (Jumping Jacks)	10	12	14	16	18	20	22	22	22	22
Rowing Exercise	3	4	5	6	6	6	6	6	6	6
Sit-ups (knees up)	5	6	7	8	9	10	11	12	13	14
Push-ups (Three sets as stated) with	5	6	7	8	9	10	11	12	13	14
10 second rests in between	3	4	4	6	6	6	7	7	8	9
	2	2	2	3	3	4	4	5	5	5

WORK-PHASE

Week 1	Walk 15 minutes leisurely pace (approximately 3/4 mi.)
Week 2	Walk 15 minutes leisurely pace (approximately 3/4 mi.)
Week 3	Walk 20 minutes leisurely pace (approximately 1 mi.)
Week 4	Walk 20 minutes leisurely pace (approximately 1 mi.)
Week 5	Walk 20 minutes slightly faster pace (approximately 1-1/4 mi.)
Week 6	Walk 20 minutes slightly faster pace (approximately 1-1/4 mi.)
Week 7	Walk 20 minutes moderate pace (approximately 1-1/3 mi.)
Week 8	Walk 20 minutes moderate pace (approximately 1-1/3 mi.)
Week 9	Walk 25 minutes moderate pace (approximately 1-2/3 mi.)
Week 10	Walk 30 minutes moderate pace (approximately 2 mi.)

COOL-OUT PERIOD

5 minutes of slow walking at a decelerating pace

APPENDIX 4

Prepared by NANETTE K. WENGER, M.D.

Table 1
Cardiac Inpatient Conditioning Program

Step	Exercise	Activities of Daily Living	Activity	Doctor's Initial	Therapist's Comments
1	—PASSIVE ROM TO THE UPPER AND LOWER EXTREMITIES: abduct, flex and extend elbow; pronate and supinate arm; flex and extend hip; abduct and adduct hip; flex and extend knee; plantar flex and dorsiflex ankle; rotate and flex ankle and extend toes. (Resting quietly in bed = 1.1 cal/min; 1.0 cal/min = 250 cc O ₂ consumption/min)	—Begin feeding self, rolled up in bed to at least 45° with trunk and arms supported by pillow and tray. (Feeding self while sitting = 1.4 cal/min)	—Initial interview to introduce patient to program and establish rapport.		
2	—Same as No. 1.	—Continue feeding self; begin partial AM care including washing hands, face, brushing teeth while in bed. (AM self-care = 1.6-1.8 cal/min)	—Begin craft activity involving finger and wrist. —Patient supported at 45° in bed. (Ex.: leather lacing of coin purse or key case = 1.2 cal/min)		
3	—Warm up with passive ROM and progress to active ROM in the same planes.	—Same as No. 2.	—Continue project and complete—important to rapidly complete first project for sense of achievement.		
4	—Warm up with active ROM. —Progress to minimal resistance in the same movements. —Add—stiffen whole body and count to 2 (3x).	—Continue feeding and AM care begin dressing self. (Changing gown = 2.3 cal/min; bed side commode = 3.6 cal/min)	—Begin copper tooling project. (Copper tooling project = 1.6 cal/min)		
5	—Warm up with minimal resistive ROM exercises. —Hands on shoulders begin elbow circling (5x each). —Repeat ROM with moderate resistance.	—Sitting at bed side self-feeding 3 meals /day. —Dressing, shaving or combing hair. (Dressing etc. while standing = 3.8 cal/min)	—As copper tooling project progresses, caloric level increases because of increased resistance and required use of different tools.		
6	—Warm up with moderate resistive ROM. —With weights (1-3 lbs., dependent on age, sex, and condition before admission) flex and extend at shoulder, abduct and adduct shoulder, 5X each arm.	—Begin walking toward bathroom; bathe in tub. (Bathing = 5 cal/min; Walking slowly = 3.5 cal/min)	—Begin light refinishing on precut wood project. (Wood refinishing = 2.2 cal/min)		

Step	Exercise	Activities of Daily Living	Activity	Doctor's Initial	Therapist's Comments
	—With weighted sand bags (5 lbs.) straighten knee from sitting position, 5x each.				
7	—Warm up with moderate resistive ROM, increasing number of repeti- tions dependent on patient tolerance. —Walk length of hall (50 Ft.) 1X at average walking pace.	—Same as No. 6.	—Continue wood proj- ect.		
8	—Warm up with moderate resistive ROM increasing number of repetitions dependent on patient tolerance. —Trunk twisting 5X each side. —Lateral side bending 5X each side. —Walk down 1 flight of stairs, go to O. T. Clinic via elevator for contin- uing craft activity. —Walk length of hall 1X (50 Ft.) (Walking down 1 flight = 5.2 cal/min)	—Begin walking down stairs and continue all needed activities of daily living re- quired while in hos- pital.	—Continue wood work project.		
9	—Warm up with moderate resistive ROM increasing number of repetitions dependent on patient tolerance. —Lateral side bending 10X each side. —Walk down 1 flight of stairs and then to O. T. Clinic via elevator. —Walk length of hall 2X.	—Same as No. 8.	—Begin metal ham- mering project. (Metal hammering project = 2.5 cal/ min)		
10	—Warm up with moderate resistive ROM increasing number of repetitions dependent on patient tolerance. —Lateral side bending 10X each side holding a 1 lb. weight. —Trunk twisting 10X each side holding a 1 lb. weight. —Walk down 1 flight of stairs and then to O. T. Clinic via elevator. —Walk length of hall 2X.	—Same as No. 9.	—Same as No. 9.		
11	—Warm up with moderate resistive ROM increasing number of repetitions dependent on patient tolerance and increasing the resistance. —Remainder as in No. 10.	—Same as No. 9.	—Same as No. 9.		
12	—Warm up with moderate to maximum resistive-ROM increasing number of repetitions dependent on patient toler- ance. —Lateral side bending 10X each side holding a 1 lb. weight. —Trunk twisting 10X each side holding a 1 lb. weight. —Walk down 2 flights of stairs.	—Begin homemaking activities and in- struction in con- servation of energy. (Homemaking ac- tivities as high as 5.4 cal/min)	—Cut out wood proj- ect on table jig saw.		
13	—Warm up with moderate to maximum resistive-ROM increasing number of repetitions dependent on patient toler- ance. —Lateral side bending 10X each side holding a 2 lb. weight. —Trunk twisting 10X each side holding a 2 lb. weight. —Walk down 2 flights of stairs.	—Same as No. 12.	—Continue wood pro- ject.		

Step	Exercise	Activities of Daily Living	Activity	Doctor's Initial	Therapist's Comments
14	—Warm up with moderate to maximum resistive ROM increasing number of repetitions dependent on patient tolerance. —Lateral side bending 10X each side holding a 2 lb. weight. —Trunk twisting 10X each side holding a 2 lb. weight. Touch toes from a sitting position 10X. —Walk up one flight of stairs. (Walk up stairs—8-12 cal/min.)	—Same as No. 12.	—Complete all projects.		

Table 2
Out Patient Cardiac Conditioning Program

Standard Format

A. Warm up exercises

1. Trunk twisting

Stand erect, feet 16" apart. Raise arm away from side to shoulder level. Turn body to right, then back to middle, then to left. Keep feet stationary.

2. Knee raising

Stand erect with feet 16" apart, arms at sides. Raise left knee as high as possible, grasping knee and shin with hands. Pull leg against body keeping back straight. Lower foot to floor. Repeat with opposite leg.

3. Toe touching

Stand erect, feet apart 16". Bend down to touch floor outside left foot. Bob up and down to touch floor between feet. Bob again and bend to touch floor outside right foot. Return to starting position and repeat.

4. Lateral bending

Stand erect, feet 16" apart. Place right arm over head with elbow bent. Keeping back straight, bend sideways from waist to left. Slide left hand down leg as far as possible; at the same time press to left with right arm. Return to starting position and do exercise to right.

5. Arm circling

Stand erect, feet 12" apart, arms at sides. Make large circles with arms in a windmill action—one arm following other and both moving at same time. Do half the circles forward, and half backward.

6. Long sits

Sitting on floor with legs straight, arms out from side. Reach with right hand toward left foot and return to sitting. Then reach toward right foot with left hand.

B. Walking and Running

1. Walk 1/4 mile in 3.5 minutes or less; increase the distance by 1/8 miles per week (and the time by 1-3/4 minutes for each 1/8 mile).

2. Run in place to maximal endurance. Time to reach this, and maximal heart rate is record-

ed at each training session.

C. A "cooling down" period of slow walking for 10 minutes follows each training session.

Table 3

Out Patient Cardiac Conditioning Program
"Advanced" Group Format

A. Warm-up Exercises

1. Trunk twisting

Stand erect, feet 16" apart. Raise arm from side to shoulder level. Turn body to right, then back to middle, then to left. Keep feet stationary.

2. Toe touching

Stand erect, feet apart 16". Bend down to touch floor outside left foot. Bob up and down to touch floor between feet. Bob again and bend to touch floor outside right foot. Return to starting position and repeat.

3. Lateral leg lift

Lie on right side with right arm over head and left arm on left leg. Raise up trying to touch left foot by sliding left arm down left leg. Repeat 10 times, then switch sides.

4. Prone leg lift

Lie flat on stomach with arms over head. Raise right arm and left leg together. Then raise left arm and right leg together. This counts as one repetition.

5. Modified sit-ups

a) Lie on back with knees bent and feet flat on floor. With arms straight try to touch knees with hands, curling body up.

b) After this becomes easy, place hands behind head.

c) Then place arms across head.

6. Modified push-ups

Lie on stomach. Place hands under shoulders and palms flat on the floor. Straighten arms lifting upper body, keeping the knees on the floor. Bend arms to lower body.

B. Walking and Running

1. Walk 1 to 1-1/2 miles at a rate of 14 minutes per mile (21 minutes for 1-1/2 miles).

2. Run in place up to 7-10 minutes. Maximal heart rate is recorded at each training session.

C. A "cooling down" period of slow walking for 10-15 minutes—follows each training session.



